

La e-santé

Télésanté, santé numérique ou santé connectée

Bibliographie thématique

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En guise d'introduction : une solution pertinente aux nombreux défis des systèmes de santé

Le terme de e-santé (e-health en anglais) - avec ses équivalents : télésanté, santé numérique, santé connectée - désigne tous les domaines où les technologies de l'information et de la communication (TIC) sont mises au service de la santé, telle qu'elle a été définie par l'Organisation mondiale de la santé (OMS) en 1945 : « La santé est un état de complet bien-être physique, mental et social, et ne consiste pas seulement en une absence de maladie ou d'infirmité ». Cela concerne des domaines comme la télémédecine, la prévention, le maintien à domicile, le suivi d'une maladie chronique à distance (diabète, hypertension, insuffisance cardiaque ...), les dossiers médicaux électroniques ainsi que les applications et la domotique.

La e-santé apparaît de plus en plus comme une solution pertinente pour répondre aux défis que doivent relever les systèmes de santé : évolution de la démographie médicale, inégalités territoriales d'accès aux soins, hausse de la prévalence des maladies chroniques ou encore vieillissement de la population et prise en charge de la dépendance. En revanche, une incertitude demeure quant à sa capacité à réduire les coûts, du moins dans un premier temps : si elle laisse espérer plus d'efficacité, elle pourrait aussi offrir de nouveaux services, entraînant des dépenses supplémentaires. L'enjeu du déploiement de la télésanté est donc moins économique que qualitatif.

Toutefois, malgré l'intérêt suscité, la e-santé est longtemps demeurée sous-exploitée. Ce constat est vrai pour l'ensemble des pays de l'OCDE¹, même si certains pays nordiques disposaient d'un système d'ordonnances électroniques, d'un portail national d'information sur la santé en ligne et d'un dossier patient numérisé au début des années 2000. En France, de nombreux programmes informatiques ont fait l'objet d'investissements dans les hôpitaux dans le cadre d'une modernisation du fonctionnement administratif, qui ne concourait pas directement à la qualité des soins².

Le contexte a beaucoup évolué ces dernières années, et la santé numérique semble être la solution alliant l'efficacité des soins apportés à la maîtrise des dépenses de santé, mais sa généralisation implique de trouver des réponses à des questions de tous ordres telles que : la confidentialité des données personnelles, la gestion du déploiement des solutions techniques pour couvrir l'ensemble de la population, le basculement vers le numérique des services de santé actuels, la responsabilisation, la formation, l'autonomie, le suivi des patients lorsque les solutions de e-santé leur permettront de rester à domicile pour leur traitement.

En France, l'outil technologique n'est certes pas la réponse unique aux difficultés de prise en charge du patient. Toutefois, correctement mise au service du décloisonnement des secteurs sanitaire et médico-social, hospitalier et ambulatoire, médical et paramédical, la e-santé pourra servir de levier pour encourager la prévention et les soins primaires, tout en garantissant un principe constitutif du système de santé français depuis 1945 : l'accès à des soins de qualité pour tous grâce à un maillage effectif du territoire. De plus, la télésanté permettra de replacer l'utilisateur au cœur du dispositif et de répondre à sa volonté d'autonomie, désormais reconnue comme un droit des malades³. Longtemps considérée comme un pays à la traîne en matière de e-santé, la France semble avoir pris la mesure, depuis les années 2010, de l'utilité d'une véritable politique de santé numérique. Il est à noter également que le marché de la e-santé grandit principalement en dehors de l'hôpital (plutôt orienté vers la future mise en place du dossier médical personnel), au plus près des patients dans leur lieu de domicile, avec deux cibles clairement identifiées qui sont : les patients atteints de maladies chroniques (diabète, insuffisance cardiaque,...), les seniors ou les personnes handicapées vivant à domicile et nécessitant une assistance spécifique.

Si les attentes sont nombreuses, les défis le sont aussi. Les TIC vont-elles permettre de mieux protéger les données médicales ou vont-elles au contraire, en donnant la possibilité d'accroître la mobilité de l'information et des services, rendre ces données plus vulnérables ? Est-ce qu'il existe des méthodologies d'évaluation de la

¹ OCDE (2009). Obtenir un meilleur rapport qualité-prix dans les soins de santé.

² OCDE (2010). Améliorer l'efficacité du secteur de la santé : le rôle des technologies de l'information et de la communication.

³ D'après la note du Centre d'analyse stratégique. Quelles opportunités pour l'offre de soins de demain : la télésanté. (N° 255, décembre 2011).

e-santé ? Quel cadre législatif supplémentaire pour son développement ? Quelles sont les nouvelles responsabilités des professionnels de santé ? Une mobilisation de tous les acteurs et une nouvelle coordination de leurs actions au niveau régional, national, européen semblent indispensables pour que la e-santé remplisse ses promesses, ainsi qu'une bonne intégration de ces nouvelles technologies dans la politique de santé globale.

L'objectif de cette bibliographie est de recenser des sources d'information (ouvrages, rapports, articles scientifiques, littérature grise, sites institutionnels...) dans le domaine de la e-santé pour la période s'étendant de 2000 à juillet 2019. Le périmètre géographique retenu concerne la France, l'Europe, les États-Unis, le Canada et l'Australie. Les recherches bibliographiques ont été réalisées sur les bases suivantes : Base bibliographique de l'Irdes, Banque de données santé publique (BDSP), Medline. Lorsque les requêtes de recherches rapportaient plus de 1 000 références dans la littérature scientifique notamment anglo-saxonne, la sélection s'est orientée vers les revues de la littérature (review, systematic review, literature review, scopus review) et les documents accompagnés de résumé. Les références sont présentées par ordre alphabétique d'auteurs et/ou de titres. Elles sont précédées d'une définition de la e-santé, ainsi que d'une délimitation de ses domaines d'action.

Un essai de définition

La littérature regorge d'expressions consacrées à la santé numérique ou connectée. Les professionnels de santé parlent essentiellement de télémédecine, alors que les ingénieurs informaticiens ou du numérique parlent surtout d'e-santé. Beaucoup de termes français sont la traduction de mots utilisés dans la littérature anglo-saxonne. E-health se traduit en français par « e-santé », telehealth par « télésanté ». En France, le terme télésanté intègre tous les domaines de la santé numérique, mais dans les pays anglo-saxons, telehealth est surtout utilisé pour décrire les services de la télémédecine informative⁴.

Elle est aussi nommée : TIC santé et, depuis plus de dix ans, l'utilisation des TIC dans le domaine de la santé est abordée dans de nombreux travaux académiques et institutionnels.

Le premier usage du terme « e-santé » remonte vraisemblablement à 1999. Lors d'une présentation au 7^e congrès international de la télémédecine – ou médecine à distance – John Mitchell, un consultant australien dans le domaine de la santé, le définit comme « l'usage combiné de l'internet et des technologies de l'information à des fins cliniques, éducationnelles et administratives, à la fois localement et à distance ».⁵

LES APPROCHES INTERNATIONALES

Selon l'Organisation mondiale de la santé (OMS), la e-santé se définit comme « les services du numérique au service du bien-être de la personne » c'est-à-dire comme l'application des technologies de l'information et de la communication (TIC) au domaine de la santé et du bien-être. La télémédecine est une activité professionnelle qui met en œuvre des moyens de télécommunications numériques permettant à des médecins et à d'autres membres du corps médical de réaliser à distance des actes médicaux, alors que la télésanté concerne l'utilisation des systèmes de communication pour protéger et promouvoir la santé.

Le périmètre de la e-santé

Pour pallier à cette large définition de la e-santé, il est nécessaire d'en déterminer les frontières en faisant l'inventaire des disciplines et concepts qui s'en réclament⁶.

Premier domaine majeur : **les systèmes d'information de santé (SIS) ou hospitaliers (SIH)**, qui forment le socle sur lequel repose la e-santé : ils organisent, au niveau informatique, les échanges d'informations entre la médecine de ville et l'hôpital, ou entre services au sein d'un même hôpital. C'est sur ces systèmes que reposent le dossier médical partagé (DMP), le système de carte vitale...

⁴ Simon P. (2016). Télémédecine et enjeux pratiques

⁵ E-santé : la médecine à l'ère du numérique. Science & Santé, n° 29, 2016

⁶ E-santé : la médecine à l'ère du numérique. Science & Santé, n° 29, 2016

Deuxième domaine : **la télésanté** qui regroupe notamment la **télé médecine** et la **m-santé**.

Quant à **la m-santé** (pour mobile-santé), il s'agit de la santé via les smartphones, domaine plus connu du grand public. Ainsi, en France, selon un sondage réalisé par Odoxa en janvier 2015, un tiers de la population possède un appareil connecté permettant de mesurer des données physiologiques ou l'activité physique. Toutefois, l'automesure est un phénomène bien antérieur à l'arrivée de la connexion puisque, si trois Français sur quatre possédaient un objet de mesure chez eux en 2013, seulement 11 % disposent d'une version connectée en 2015.

Un document de la Communauté européenne décrit un périmètre assez proche de celui-ci⁷. La e-santé comprend :

- Les réseaux régionaux et nationaux d'information pour la santé et les systèmes de dossier électronique distribués, y compris les systèmes d'information pour les professionnels de santé et les hôpitaux, les services en ligne tels que la prescription électronique, les bases de données, portails et les systèmes de promotion en ligne pour la santé.
- Les systèmes de télé médecine et les services associés (téléconsultation, téléradiologie, télésurveillance...)
- Les outils spécialisés pour les professionnels de santé et les chercheurs (robotique et environnements avancés pour le diagnostic et la chirurgie, outils pour la simulation et la modélisation, grilles pour la santé, outils de formation.

Il s'agit donc d'un ensemble très vaste de techniques et de services, impliquant un large éventail d'acteurs et couvrant de nombreux domaines relevant de la santé ; un marché à fort potentiel de croissance qui pèse environ 20 milliards d'euros au niveau européen⁸, ce qui le porte au troisième rang des marchés de la santé^{9,10}. Une étude de Xerfi estime que le marché de la e-santé pourrait se situer en France aux environs de 5 milliards d'euros en 2020.

L' APPROCHE FRANÇAISE

En France, la télé médecine a reçu une première définition dans l'article 32 de la [loi n° 2004-810 du 13 août 2004](#) comme un acte médical à distance : « la télé-médecine permet entre autres, d'effectuer des actes médicaux dans le strict respect des règles de déontologie mais à distance, sous le contrôle et la responsabilité d'un médecin en contact avec le patient par des moyens de communication appropriés à la réalisation de l'acte médical ». Elle a ensuite été définie par la [loi Hôpital Patients Santé Territoire \(HPST\) n° 2009-879 du 21 juillet 2009](#) comme une pratique médicale à distance faisant intervenir au moins un médecin. Sa définition et sa mise en œuvre sont précisées par [le décret n° 2010-1229 du 19 octobre 2010](#) (Journal officiel du 21 octobre). La télé médecine se détermine comme les actes médicaux réalisés à distance au moyen d'un dispositif utilisant les technologies de l'information et de la communication.

Cinq types d'actes sont ainsi concernés :

- **la téléconsultation** : un médecin donne une consultation à distance à un patient. Un professionnel de santé ou un psychologue peut être présent auprès du patient et, le cas échéant, assister le médecin au cours de cet acte ;
- **la télé-expertise** : un médecin sollicite à distance l'avis d'un ou de plusieurs de ses confrères en raison de leurs formations ou de leurs compétences particulières, sur la base des informations liées à la prise en charge d'un patient ;
- **la télésurveillance médicale** : un médecin interprète à distance les données nécessaires au suivi médical d'un patient et, le cas échéant, prend des décisions relatives à sa prise en charge.

⁷ La e-santé, une solution pour les systèmes de santé européens. Les dossiers européens, n° 17, 2009

⁸ Commission Européenne (2018). Market study on telemedicine

⁹ Pour des données sur le marché en France : [Marché de la e-santé en France : état de l'art et leviers de croissance](#) (Tech Care, janvier 2018).

¹⁰ [Santé connectée : les quatre chiffres qu'il faut connaître pour la France](#), 2016.

L'enregistrement et la transmission des données peuvent être automatisés ou réalisés par le patient lui-même, ou par un professionnel de santé ;

- la **télé-assistance médicale** : un médecin assiste à distance un autre professionnel de santé au cours de la réalisation d'un acte ;
- la **réponse médicale apportée dans le cadre de la régulation médicale** des urgences ou de la permanence des soins.

La France reprend ainsi la définition formulée par l'OMS. Le juriste Jean-Michel Croels va plus loin en différenciant la télémédecine médicale et la télémédecine informative, qui ne relèvent pas du même droit. Les services de la télémédecine informative sont des prestations du système de la société de l'information, régies par le droit de la concurrence (directives européennes de 1998 et 2000 sur le e-commerce), alors que la télémédecine médicale relève du droit de la santé et est inscrite au Code de la santé publique¹¹. La télémédecine médicale permet aux professions de santé de réaliser à distance des actes médicaux pour des patients. La télémédecine informative organise la diffusion du savoir médical et des protocoles de prise en charge des malades et des soins dans le but de soutenir et d'améliorer l'activité médicale.

[La loi de financement de la sécurité sociale pour 2014](#) a par la suite prévu la mise en place d'expérimentations de financement dérogatoire de la télémédecine (téléconsultation, télé-expertise et télésurveillance) dans neuf régions. Le cahier des charges des expérimentations a été élargi en 2016 à l'ensemble des patients atteints d'affection de longue durée (ALD) ou résidant en structure médico-sociale.

[La loi de financement de la sécurité sociale pour 2017](#) a prorogé d'un an le financement des expérimentations et acté leur élargissement à l'ensemble du territoire. [L'article 54 de la loi de financement de la sécurité sociale pour 2018](#) concerne la prise en charge des actes de la télémédecine et bascule leur financement dans le droit commun de la sécurité sociale. Il organise la prise en charge de la téléconsultation par vidéotransmission et de la télé-expertise par l'assurance maladie. Dans l'attente de signature de l'accord conventionnel, le cadre expérimental restera en vigueur jusqu'au 1er juillet 2019 au plus tard. Par ailleurs, il renouvelle le cadre expérimental, jusqu'au 30 septembre 2021, de la télésurveillance par pathologie. Cela concerne la prise en charge des plaies chroniques et complexes, de l'insuffisance cardiaque chronique, de l'insuffisance respiratoire sévère et de l'insuffisance rénale chronique). Le financement des expérimentations sera réalisé par le Fonds d'investissement régional (FIR).

La PLSS 2018 prévoit également de mobiliser 100 millions d'euros pour accélérer la transformation numérique des établissements de santé. Cette enveloppe s'inscrit dans le cadre du [grand plan d'investissement 2018-2022](#) annoncé par le gouvernement. Elle aura pour objectifs prioritaires, de développer les services numériques au bénéfice du patient et de renforcer les liens entre l'hôpital et les professionnels de ville. Elle permettra ainsi de poursuivre la modernisation du système d'information des services d'aide médicale urgente (Samu) afin de fiabiliser et de sécuriser les Samu-centres 15 dans l'exercice de leur mission. Cette modernisation avait été initiée en 2015 par l'Agence des systèmes d'information partagés de santé (Asip-Santé).

Le cap du basculement dans un financement de droit commun des actes de téléconsultation (TLC) et de télé-expertise (TLE) est franchi par l'accord conventionnel entre l'Assurance Maladie et les syndicats de médecins de septembre 2018¹². La téléconsultation s'inscrit désormais dans le respect du parcours de soins coordonné, le patient doit être connu du médecin depuis 12 mois et donner son consentement à la TLC. La TLE quant à elle est réservée jusqu'à fin 2020, aux patients pour lesquels l'accès aux soins doit être facilité au regard de leur état de santé ou de leur situation géographique. En mars 2019, la Caisse nationale d'assurance maladie (Cnam) a établi un premier bilan à six mois des téléconsultations¹³. Le déploiement de la téléconsultation se fait moins rapidement qu'escompté. Par ailleurs, la stratégie de santé « Ma santé 2022 » comporte un volet sur le développement du numérique en santé^{14,15} et dans ce cadre-là, un e-parcours a été lancé par la direction

¹¹ Croels J. (2006). Le droit des obligations à l'épreuve de la télémédecine. Presses universitaires de Marseille

¹² [Décret n° 2018-788 du 13 septembre 2018](#) relatif aux modalités de mise en œuvre des activités de télémédecine, Journal officiel, 14 septembre 2018.

¹³ [Communiqué de presse de la Cnam, 26 mars 2019](#)

¹⁴ Stratégie nationale pour le développement de l'e-santé. Paris, Ministère chargé de la santé.

¹⁵ Pon, D. et Coury, A. (2018). Stratégie de transformation du système de santé : Accélérer le virage numérique. Rapport final. Paris Ministère chargé de la santé

générale de l'offre de soins en juillet 2019¹⁶. Enfin, le projet de loi d'organisation et de transformation du système de santé 2019 prévoit d'étendre le télésoin à d'autres professions de santé : pharmaciens d'officine, auxiliaires médicaux¹⁷.

FOCUS : LES DATES-CLEFS DE LA TELEMEDECINE EN FRANCE

Les dates clefs de la télémédecine en France

Loi n° 2004-810 relative à l'assurance maladie du 13 août 2004 : la télémédecine est définie comme un acte à distance dans l'article 32.

Loi Hôpital Patients Santé et Territoire (HPST) n° 2009-879 du 21 juillet 2009 : la télémédecine est définie comme une pratique médicale à distance faisant intervenir au moins un médecin.

Décret n° 2010-1229 du 19 octobre 2010 : il précise sa définition et sa mise en œuvre. Cinq types d'actes sont mentionnés : la téléconsultation, la télé-expertise, la télésurveillance médicale, la téléassistance médicale et la réponse médicale apportée dans le cadre de la régulation médicale des urgences et de la permanence de soins.

Loi n° 2013-1203 de financement de la sécurité sociale pour 2014 du 23 décembre 2013 prévoit la mise en place d'expérimentations de financement dérogatoire de la télémédecine (téléconsultation, télé-expertise et télésurveillance) dans neuf régions (Article 36).

Loi n° 2016-1827 du 23 décembre 2016 de financement de la sécurité sociale pour 2017 : elle proroge d'un an le financement des expérimentations et acte leur élargissement à l'ensemble du territoire.

Loi n° 2017-1836 du 30 décembre 2017 de financement de la sécurité sociale pour 2018 : l'article 54 bascule le financement de la télémédecine dans le droit commun de la sécurité sociale (tarification conventionnelle).

Avenant n° 6 à la convention nationale des médecins du 14 juin 2018 : il fixe les modalités de mise en œuvre et de tarification de la télémédecine (actes de téléconsultation et de télé-expertise).

Décret n° 2018-788 du 13 septembre 2018 : il fixe les modalités de la mise en œuvre des activités de la télémédecine et poursuit les expérimentations dans le domaine de la télésurveillance.

Arrêté du 27 octobre 2018 : il proroge pour quatre ans les expérimentations de télésurveillance pour cinq pathologies (diabète, prothèse cardiaque implantable, insuffisance rénale, cardiaque ou respiratoire chroniques).

Projet de loi d'organisation et de transformation du système des soins 2019 (version adoptée le 20 juin 2019 par la Commission mixte paritaire du Sénat) : l'article 13 définit le télésoin comme pratique de soin à distance utilisant les technologies de l'information et de la communication qui met en rapport un ou plusieurs pharmaciens ou auxiliaires médicaux en complément de la télémédecine réservée aux professions médicales.

Arrêté du 14 juin 2019 relatif à l'expérimentation pour la prise en charge par la télésurveillance du diabète gestationnel.

QUELQUES REFERENCES BIBLIOGRAPHIQUES

Comyn, G. (éd.). (2009). "La e-santé : une solution pour les systèmes de santé européens." Dossiers Européens (Les)(17).

¹⁶ DGOS. Le programme e-parcours (juillet 2019)

¹⁷ Texte du projet de loi adopté au Sénat le 11 juin 2019

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Après une définition du champ de la santé numérique, ce dossier aborde ces multiples applications dans le domaine médical, les attentes ainsi que les défis suscités par ces nouvelles technologies.

Croels, J. M. (2006). Le droit des obligations à l'épreuve de la télémédecine., Marseille : Presses Universitaires d'Aix-Marseille
https://books.google.fr/books/about/Le_droit_des_obligations_%C3%A0_l_%C3%A9preuve_d.html?id=ORvfXwAACAAJ&redir_esc=y&hl=fr

La télémédecine médicale permet à plusieurs professionnels de santé de communiquer pour favoriser la prise en charge d'un patient dans le cadre d'un diagnostic ou d'une thérapie. Elle recouvre les activités de télé-diagnostic, de télé-encadrement, de télé-staffs, de télésurveillance et de télé-chirurgie. Ces pratiques permettent de rationaliser le découpage de la carte sanitaire et sociale française et d'assurer, à un moindre coût, une médecine de qualité grâce à un accès distant à des avis spécialisés. Bouleversant la pratique de la médecine, cette activité peut être à la source de nombreux conflits et de difficultés pratiques et juridiques. La responsabilité des acteurs de la télémédecine (médecins, établissements de santé promoteurs et tiers technologiques) présente un certain nombre de spécificités. Elles sont induites par l'originalité des activités pratiquées et par le cadre juridique élaboré pour organiser et conduire les actes médicaux à distance. Pour l'heure, la télémédecine souffre d'un réel déficit de qualification juridique. Or c'est un élément essentiel de la détermination du régime de responsabilité applicable. Ainsi, confronter la pratique de la télémédecine au droit des obligations permet d'une part, d'orienter ses réflexions utiles à la constitution des réseaux et à la résolution des conflits. Elle se révélera, d'autre part, importante pour élaborer des règles juridiques et déontologiques qui devront être mises en place dans l'avenir.

Fatehi, F. et Wootton, R. (2012). "Telemedicine, telehealth or e-health? A bibliometric analysis of the trends in the use of these terms." J Telemed Telecare **18**(8): 460-464.

The terms 'telemedicine', 'telehealth' and 'e-health' are often used interchangeably. We examined the occurrence of these terms in the Scopus database. A total of 11,644 documents contained one of the three terms in the title or abstract. Telemedicine was the most common term, with 8028 documents referring to it, followed by e-health (n = 2573) and then telehealth (n = 1679). Telemedicine was referred to in documents from 126 countries; the terms telehealth and e-health were found in publications from 55 and 99 countries, respectively. Documents with telemedicine in their title or abstract first appeared in 1972, and continued to appear at a low rate until 1994 when they started to increase rapidly; telehealth showed a similar pattern, but with the growth beginning about five years later. Although articles containing the term e-health appeared later than the other two terms, the rate of increase was higher. Articles (journal papers) were the most common type for the three key terms, followed by conference papers and review articles. Publication rates for telemedicine or telehealth or e-health were compared with two other relatively new fields of study: Minimally Invasive Surgery (MIS) and Highly Active Antiretroviral Therapy (HAART). Publications concerning HAART seem to have reached a peak and are now declining, but those with the three key terms and those concerning MIS are both growing. The variation in the level of adoption for the three terms suggests ambiguity in their definition and a lack of clarity in the concepts they refer to.

Moghaddasi, H., et al. (2012). "E-Health: a global approach with extensive semantic variation." J Med Syst **36**(5): 3173-3176.

In recent years, there has been considerable attention towards the development of information and communication technology (ICT) in health care delivery known as 'E-Health'. The term "E-Health" is almost a new concept and the E-Health projects mainly aim to improve service delivery to people, though different countries might have different approaches in using E-Health. The focus of this study is to review factors influencing the development of E-Health projects, as these factors could lead to an extensive semantic variation. This study reviews the E-Health status in different countries based on existing reports and documents about E-health projects in developed and developing countries and also based on the reports and documents provided by WHO, International Telecommunication Union (ITU); and World Bank. The review of the documents showed that the E-Health status in different countries is depended upon three key factors including the potential of ICT, economic capacity and the level of health status. The review of the documents indicated that there might be different meanings for the concept of E-Health in different countries, and the semantic variation in E-Health concept is related to the level of E-Health developments and implementations. Therefore, developing a clear definition of E-Health is needed.

Scala, B. (2016). "E-santé : la médecine à l'ère du numérique." *Science & Santé*(29): 33-33, tab., graph., fig.

Pour le grand public, la e-santé - pour "santé électronique" - évoque essentiellement la santé connectée, celle qui fait appel à l'internet des objets et aux applications pour smartphones. Et pour cause, ces nouvelles technologies sont majoritairement destinées au grand public, en bonne santé, et non aux malades. Cependant, c'est aussi par ce biais que ce même grand public se familiarise avec un pan plus médical de la e-santé. Ce dossier fait le point sur ce sujet.

Simon, P. (2011). "Télémédecine. Impacts du décret, évolutions, perspectives, enjeux." *Revue Hospitalière De France*(539): 68-74, ill.

[BDSP. Notice produite par EHESP R0xF8FBE. Diffusion soumise à autorisation]. La parution du décret le 9 octobre 2010 relatif à la télémédecine définit les actes de télémédecine et les conditions de mise en œuvre de ces différentes applications. L'auteur détaille les impacts du décret sur l'exercice médical (définition de la télémédecine, qualité et sécurité du dispositif, relations avec le patient, obligations du médecin...) et présente les organisations pilotes opérationnelles en France, qui devront être mises en conformité avant le 20 avril 2012. Enfin, les enjeux pour les soins primaires et pour les soins de second recours sont exposés, l'accent étant mis sur la continuité des soins.

Simon, P. (2015). *Télémédecine : enjeux et pratiques*, Brignais : Editions Le Coudrier

En médecine comme dans d'autres secteurs, les technologies modernes de communication ont ouvert de nouvelles possibilités. Grâce à elles, de nombreuses pratiques à distance ont vu le jour depuis les années 1990. Quelles sont ces pratiques ? Ont-elles fait leurs preuves ? Qu'apportent-elles aux patients, aux soignants et à la santé publique ? Feront-elles bientôt partie de notre quotidien ? Ce livre offre un point complet sur le sujet. Après avoir défini le champ et précisé les termes et les enjeux de la télémédecine, l'auteur raconte l'histoire des pays pionniers, dont fait partie la France. Il présente ensuite ce qu'il faut savoir des pratiques de télémédecine : la politique nationale, les cinq actes reconnus depuis 2010, les responsabilités engagées et la façon de mettre en œuvre un projet. Il termine l'ouvrage en détaillant les applications développées dans chaque spécialité et en présentant une sélection

d'articles scientifiques pour chacune d'entre elles. Un ouvrage de référence pour tous ceux qui s'interrogent sur les enjeux et les pratiques de la télémédecine.

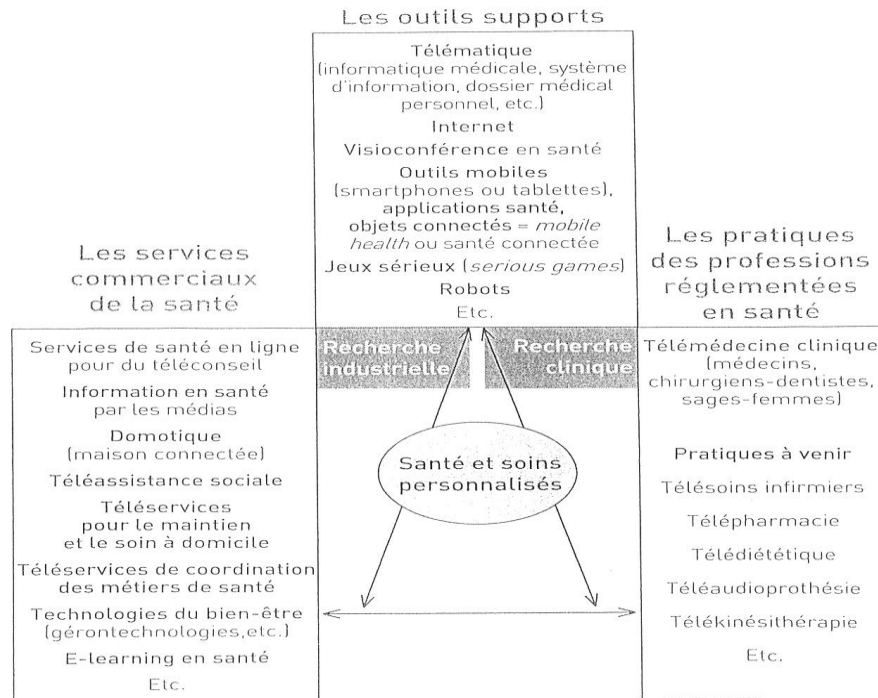
Solli, H., et al. (2012). "Principle-based analysis of the concept of telecare." *J Adv Nurs* **68**(12): 2802-2815.

AIM: To report a concept analysis of telecare. BACKGROUND: Lately telecare has become a worldwide, modern way of giving care over distance by means of technology. Other concepts, like telemedicine, e-health, and telehealth, focus on the same topic though the boundaries between them seem to be blurred. DATA SOURCES: Sources comprise 44 English language research articles retrieved from the database of Medline and Cinahl (1995-October 2011). DESIGN: Literature Review. METHOD: A principle-based analysis was undertaken through content analysis of the definitions, attributes, preconditions, and outcomes of the concept. RESULTS: The attributes are well described according to the use of technology, caring activity, persons involved, and accessibility. Preconditions and outcomes are well described concerning individual and health political needs and benefits. The concept did not hold its boundaries through theoretical integration with the concept of telemedicine and telehealth. The definition of telecare competes with concepts like home-based e-health, telehomecare, telephonecare, telephone-based psychosocial services, telehealth, and telemedicine. Assessment of the definitions resulted in a suggestion of a new definition: Telecare is the use of information, communication, and monitoring technologies which allow healthcare providers to remotely evaluate health status, give educational intervention, or deliver health and social care to patients in their homes. CONCLUSION: The logical principle was assessed to be partly immature, whereas the pragmatical and linguistical principles were found to be mature. A new definition is suggested and this has moved the epistemological principle forward to maturity.

REPRESENTATION GRAPHIQUE DE LA E-SANTE

Le périmètre de la e-santé

Extrait de : *Télémédecine : enjeux et pratiques / Simon P. (2015) – Editions Le Coudrier*



La e- santé : Une vision d'ensemble

RAPPORTS INSTITUTIONNELS FRANÇAIS

Anap (2018). Mener un achat de solutions numériques complexes en santé. Paris Anap: 44 , tab., graph., fig.

<http://www.anap.fr/ressources/publications/detail/actualites/mener-un-achat-de-solutions-numeriques-complexes-en-sante/>

Les projets Territoire de soins numérique (TSN) visent à améliorer les prises en charge des patients et la fluidité de leur parcours de santé grâce au développement du numérique. Ces projets reposent sur le déploiement d'un système d'information et d'outils numériques performants en soutien d'une organisation au service de la coordination de l'ensemble des professionnels de santé et acteurs de la prise en charge. La définition de modèles organisationnels sur les territoires s'est ainsi accompagnée d'une détermination de besoins en matière de systèmes d'information et de services numériques, nouveaux et à acquérir, ou déjà existants et alors à faire évoluer. Pour cela, les régions expérimentatrices TSN ont contractualisé avec des consortiums d'industriels à l'issue d'une procédure d'achat public. Destiné à toute structure porteuse d'un projet d'achat de système d'information territorial, ce document s'attache d'une part, à décrire les éléments structurants de la définition d'une stratégie d'achat et les étapes de sa déclinaison opérationnelle et d'autre part, à mettre en évidence les facteurs clés de succès de la phase d'exécution du contrat d'achat, c'est-à-dire de la notification du marché (acte qui rend l'industriel choisi officiellement titulaire du contrat) à la réception définitive des prestations de construction et de mise en œuvre de la solution. En s'appuyant sur les retours d'expériences des régions TSN et le témoignage d'industriels (retenus ou non au terme de la procédure d'achat), l'ANAP met en évidence les six étapes principales d'une stratégie d'achat et identifie un certain nombre de facteurs de succès pour sa mise en œuvre et pour l'exécution du contrat d'achat en résultant. Par ailleurs, des fiches pratiques élaborées par le groupement d'achat Resah complètent ce document pour accompagner la mise en œuvre de projets d'achat de SI complexes. Enfin, bien qu'issus de la capitalisation du programme TSN, les principes qui se dégagent tout au long de ce document peuvent s'appliquer à tout projet d'achat de systèmes d'information et solutions numériques complexes.

Baena, A. et Rachiq, C. (2018). Les bénéfices d'une meilleure autonomie numérique. Paris France Stratégie: 76, tabl., annexes.

<http://www.strategie.gouv.fr/publications/benefices-dune-meilleure-autonomie-numerique>

14 millions de Français, soit 28 % de la population, sont éloignés du numérique. Un véritable handicap dans un contexte de numérisation croissante des activités. Commandé à France Stratégie par le secrétaire d'État chargé du Numérique, Mounir Mahjoubi, ce rapport identifie et quantifie les bénéfices d'une meilleure maîtrise des outils numériques par la part de la population française qui ne les utilise pas dans la vie courante. Un plan visant cet objectif pourrait générer 1,6 milliard d'euros de bénéfices annuels, dans les domaines de l'économie numérique, de l'emploi et de la formation, des relations avec les services publics, de l'inclusion sociale et du bien-être.

Bertrand, D., Bontoux, D., Plouin, P. F., et al. (2019). Analyse du plan «Ma Santé 2022, un engagement collectif?» et propositions de l'Académie nationale de médecine. Paris Académie nationale de médecine: 11.

www.academie-medecine.fr/wp-content/uploads/2019/03/Ma-sant%C3%A9-2022-version-18-mars.pdf

L'Académie nationale de médecine a pris connaissance du plan « ?Ma santé 2022, un engagement collectif? », proposé par le ministère des Solidarités et de la Santé, et en approuve les principales mesures. Le présent rapport résume l'analyse de l'Académie, formule des remarques portant sur plusieurs omissions, dont celle de la prévention, et propose neuf priorités portant notamment sur la réorganisation territoriale des soins, les nouveaux partenaires, la gouvernance hospitalière et l'apport du numérique.

Blum, J. P. (2019). Livre blanc : contributions des outils numériques à la transformation des organisations de santé. Paroles d'acteurs. Tome 1. Paris Fédération Hospitalière de France: 189.

<https://h20195.www2.hpe.com/v2/Getdocument.aspx?docname=a00074336fre>

Les technologies digitales doivent être utiles à la santé publique en répondant aux besoins des patients et aux usages des soignants. Il est nécessaire qu'elles préservent la confidentialité des données personnelles, qu'elles assurent le fonctionnement des systèmes de prise en charge. Une transition très rapide des usages s'effectue actuellement qui requiert une adaptation – possiblement difficile - pour les citoyens et les professionnels de santé. Il faut veiller à ne pas oublier les plus fragiles que sont les personnes dépendantes, les handicapés, les habitants des zones mal desservies dites zones blanches. D'autre part, les offreurs de services publics ou privés doivent impérativement sécuriser leur système numérique et les adapter à l'usage des patients. Ce Livre Blanc réunit des acteurs de toute la société qui ont exprimé leur vision et leurs préoccupations relatives à la révolution annoncée par la dématérialisation en santé.

Bozio, A. et Geoffard, P. Y. (2017). L'accès des chercheurs aux données administratives. Etat des lieux et propositions d'actions. Paris La Documentation française.

<http://www.ladocumentationfrancaise.fr/var/storage/rapports-publics/174000314.pdf>

Ce rapport, commandé par la secrétaire d'Etat chargée du numérique et de l'innovation, dresse un bilan, en forme de point d'étape, du mouvement d'ouverture des données administratives aux chercheurs. Le droit sur l'accès aux données administratives à des fins de recherche est complexe, mouvant, mais surtout très mal connu, des administrations productrices, comme des chercheurs. Le rapport recommande la réalisation d'un vade-mecum des dispositifs juridiques en vigueur. Le rapport fait le constat d'une absence large d'obstacles juridiques - avec quelques exceptions - à l'accès aux données par les chercheurs mais les difficultés pratiques restent notables. Le rapport préconise la création d'une instance de concertation impliquant les producteurs de données, les chercheurs, et les administrations compétentes pour la protection et l'accès aux données publiques (Archives, Cnil, administrateur des données, Cada). Le rapport rappelle également que l'accès aux données administratives a un coût (coût de support pour les instances, coût d'accès via des dispositifs sécurisé et coût de préparation de données anonymisées ou dé-identifiées). Le rapport étudie plusieurs pistes de modèle économique, tout en soulignant l'importance à limiter au maximum ces coûts pour éviter tout gaspillage de ressources limitées.

Brun, N., et al. (2011). Rapport de la mission « Nouvelles attentes du citoyen, acteur de santé ». Paris Ministère chargé de la santé, Paris La documentation Française: 46.

<http://www.ladocumentationfrancaise.fr/rapports-publics/114000098/index.shtml>

Le présent rapport fait partie des trois missions confiées dans le cadre du dispositif « 2011, année des patients et de leurs droits », dont le thème principal porte sur le droit des patients

et de leurs proches dans les établissements de santé. Le rapport s'intéresse à la place des patients dans le système de santé, aux nouveaux comportements (usage de l'Internet) et aux nouvelles attentes concernant la gestion de leur santé. Un chapitre est consacré à l'éducation thérapeutique et aux programmes d'accompagnement pour les personnes atteintes d'une maladie chronique. Le rapport fait également le point sur les transformations liées aux nouvelles technologies de la santé, dont la télémédecine.

Cnam (2018). Rapport sur les charges et produits de l'assurance maladie pour 2019 : Améliorer la qualité du système de santé et maîtriser les dépenses : propositions de l'Assurance Maladie pour 2019. Paris Cnam: 262 , tabl.

<https://www.ameli.fr/l-assurance-maladie/statistiques-et-publications/rapports-et-periodiques/index.php>

Chaque année, l'Assurance Maladie présente au Gouvernement et au Parlement ses propositions relatives à l'évolution des charges et produits au titre de l'année suivante et aux mesures nécessaires pour atteindre l'équilibre prévu par le cadrage financier pluriannuel des dépenses d'assurance maladie. À partir d'analyses réalisées sur l'évolution des dépenses et des pratiques, et en s'appuyant sur les recommandations françaises et internationales, le rapport Charges et produits pour l'année 2019 présente des propositions et des pistes de réflexion visant à améliorer la qualité et l'efficacité des soins, et à optimiser les dépenses de santé.

CNOM (2008). L'informatisation de la santé. Le livre blanc du Conseil national de l'Ordre des médecins. Paris CNOM: 16.

Les technologies de l'information participent aujourd'hui à l'amélioration de la qualité des soins. En jouant de manière positive sur la tenue des dossiers médicaux, en facilitant l'échange et le partage des données utiles à la décision médicale, en augmentant la disponibilité et la rapidité d'accès à ces informations, ces technologies contribueront de plus en plus aux progrès de la médecine. Elles ne doivent pas pour autant être mises en œuvre sans la réflexion éthique qu'imposent les risques qu'elles feraient peser sur les données individuelles de santé et, partant de là, sur la confiance accordée aux médecins, garants de leur confidentialité. Par son rôle de fédérateur des médecins, de toutes disciplines et de tous secteurs, réunis autour des mêmes principes déontologiques, le CNOM a la responsabilité de s'engager dans les projets de système d'information de santé au nom de l'avenir scientifique, mais dans le respect absolu des libertés individuelles. Il se mobilise aujourd'hui totalement et concrètement. Totalement : en soulignant que sa coopération passe nécessairement par une association étroite au dispositif rénové de gouvernance des systèmes d'information qui se mettra en place. Concrètement : en apportant sa vision des éléments fondateurs aptes à faire entrer les médecins dans un système communicant à la hauteur des enjeux de la société de l'information. C'est par cette double implication que l'ordre entend soutenir une relance du projet de dossier médical électronique sécurisé orientée dans une voie conforme à la relation médecin-patient et à la réalité des pratiques professionnelles. L'architecture proposée par l'ordre des médecins est fondée sur le respect des droits des patients : droit d'accès aux données partagées, droit de choisir les professionnels autorisés à partager ces données, droit à l'oubli. Elle est également conçue de façon à favoriser l'appropriation des technologies de l'information par les médecins. La réussite du dossier médical électronique exige qu'il soit réalisé pour les patients, par les médecins.

CNOM (2015). Livre blanc : De la e-santé à la santé connectée. Paris Conseil National de l'Ordre des médecins: 34.

<http://www.conseil-national.medecin.fr/node/1558>

Irdes - Pôle documentation - Marie-Odile Safon

www.irdes.fr/documentation/syntheses-et-dossiers-bibliographiques.html

www.irdes.fr/documentation/syntheses/e-sante.pdf

www.irdes.fr/documentation/syntheses/e-sante.epub

Le CNOM observe avec intérêt que le débat sur la santé connectée s'est ouvert à la CNIL, dans des cercles de réflexion consacrés au numérique, dans les institutions du monde de la santé et au sein même de la Commission européenne. Ce livre blanc a vocation à enrichir le débat public. Il n'apporte pas des réponses péremptoires. Il pose des interrogations éthiques et déontologiques dans l'accompagnement des évolutions de nos sociétés et y apporte des éléments de réflexion. Il propose six recommandations, pour une "régulation adaptée, graduée et européenne" du traitement des données issues des objets ou "applis" de santé. et une évaluation scientifique "neutre" d'experts "sans lien d'intérêt avec les fournisseurs" spécifique à la télémédecine. (d'après résumé de l'éditeur).

CNOM (2018). Médecins et patients dans le monde des data, des algorithmes et de l'intelligence artificielle : analyses et recommandations du Cnom. Paris CNOM: 62 , tab., graph., fig.

<https://www.conseil-national.medecin.fr/node/2563>

Trois ans après son livre blanc sur la santé connectée, le CNOM cherche avec cette étude très complète de 70 pages à "identifier dès maintenant les risques que la société numérique comporte afin de les combattre tout en soutenant tous les bénéfices qu'elle peut apporter au service de la personne". L'Ordre des Médecins identifie les problèmes éthiques d'usage des données, de respect de la vie privée, du consentement des patients, des questions autour de la finalité de la collecte et émet 33 recommandations. Un document permettant de se faire une idée de la révolution annoncée et de son impact sur la pratique des professionnels et leur formation.

Conseil National du Numérique (2015). La santé : bien commun de la société numérique. Construire le réseau du soin et du prendre soin. Paris Conseil National du numérique: 125.

Ce rapport est consacré au rôle du numérique dans la refondation de notre système de santé. Il formule 15 propositions pour que la transformation numérique de notre système de santé favorise l'émergence d'une société plus solidaire, équitable et innovante, en cohérence avec la Stratégie nationale du numérique. Elles inspireront notamment trois chantiers en cours: la construction du futur service public d'information en santé, l'émergence de nouveaux espaces de co-innovation en santé et les travaux sur le futur dossier médical dématérialisé.

Cour des Comptes (2018). Les services publics numériques en santé : des avancées à amplifier, une cohérence à organiser. Le rapport public annuel 2018 de la Cour des Comptes. Tome 2., Paris : Cour des comptes: 215-239.

<https://www.ccomptes.fr/sites/default/files/2018-01/08-services-publics-numeriques-en-sante-Tome-2.pdf>

On entend par services numériques en santé un ensemble composé principalement des services de santé en ligne – ou téléservices, permettant aux usagers de réaliser une ou plusieurs démarches de manière dématérialisée – et des outils numériques de coordination des soins et d'échange ou de partage principalement destinés aux professionnels de santé. La Cour avait constaté dans son rapport public annuel 2013 la forte dynamique des téléservices en santé, mais relevé de nombreux retards et faiblesses qui nuisaient fortement à leur contribution aux progrès qui pouvaient en être attendus : une plus grande efficacité, une meilleure qualité de la prise en charge et une optimisation des parcours de soins. L'échec du dossier médical personnel était à cet égard particulièrement révélateur de difficultés majeures qui avaient conduit la Cour à recommander notamment aux pouvoirs publics de mieux piloter leur développement. À l'occasion d'une récente enquête sur la

télémédecine, elle a souligné également les perspectives très prometteuses ouvertes en matière de soins par le développement des échanges par voie numérique, mais mis en évidence qu'une mobilisation effective des gains d'efficacité et de qualité des soins qu'elle pouvait permettre demeurerait tributaire d'une stratégie plus cohérente. Dans le prolongement de ces différentes enquêtes ainsi que de la communication plus large qu'elle a remise, en janvier 2016, à l'Assemblée nationale sur le développement des services numériques au sein de l'État, la Cour a cherché à mesurer les évolutions intervenues au cours des années récentes en matière de services publics numériques en santé. Elle a constaté en ce domaine des progrès, réels mais inégaux, porteurs de résultats d'ores et déjà appréciables (I). Mais faire pleinement des services numériques le levier de modernisation en profondeur du système de soins qu'ils doivent être exige de lever différents obstacles et d'inscrire ces services dans un cadre plus cohérent (II).

CSIS (2015). GT 33 CSIS---CSF : Permettre l'émergence d'une stratégie industrielle en matière de e-santé, En soutien de la politique de santé publique, en associant les industriels. Lever les freins au déploiement de la télémédecine. Paris : Conseil Stratégique des Industries de Santé: (261), annexes.

Le Contrat de Filière Industries et Technologies de Santé, conclu en juillet 2013 entre l'Etat et les représentants de fédérations industrielles, comporte une mesure (dite « mesure 33 ») dédiée à faciliter le développement de la e-santé, reconnue comme filière d'avenir stratégique à fort potentiel de développement. Le groupe de travail mixte (« GT 33 »), chargé de la mise en œuvre de ces engagements a associé les représentants des pouvoirs publics (DGOS, DSSIS, DGE, DGRI, ASIP Santé, ANAP, HAS, CNAMTS, ANSM) et des syndicats industriels (SNITEM, Syntec Numérique) sous la co-présidence de Pierre LEURENT (Syntec Numérique et SNITEM) et de Philippe BURNEL (ministère des Affaires sociales, de la Santé et des Droits des femmes). Il rend public aujourd'hui son rapport d'activité et annonce un ensemble d'engagements visant à faciliter le déploiement de la télémédecine.

CSIS (2016). GT 28 CSF. Créer les conditions d'un développement vertueux des objets connectés et des applications mobiles en santé. Paris : Conseil Stratégique des Industries de Santé: (214), annexes.

<http://social-sante.gouv.fr/systeme-de-sante-et-medico-social/e-sante/article/objets-connectes-et-applications-mobiles-en-sante>

Le ministère des Affaires sociales et de la Santé (Délégation à la Stratégie des Systèmes d'Information de Santé), le ministère de l'Économie, de l'Industrie et du Numérique, et les Fédérations d'industriels regroupés au sein de l'alliance eHealth France (SNITEM, LESSIS, Syntec Numérique, LEEM, FEIMA) ont achevé leurs travaux dans le cadre du Comité Stratégique de Filière Santé et publient le rapport élaboré par le groupe de travail sur la thématique de la santé mobile (GT 28). Afin de « Créer les conditions d'un développement vertueux des objets connectés et des applications mobiles en santé », ils proposent la mise en œuvre d'un référentiel de labellisation avec un focus sur la fiabilité médicale, la protection des données et la cybersécurité.

CSIS (2016). Rapport du Conseil stratégique des industries de santé. Paris : Conseil stratégique des industries de santé 63.

Le Conseil stratégique des industries de santé, espace de concertation et d'échanges entre les industriels du secteur et les pouvoirs publics, est le lieu où se dessine une vision stratégique partagée. A la suite du séminaire du 17 avril 2015, ouvert par le Premier ministre, trois groupes de travail ont été mis en place : ils ont réuni les industriels et les pouvoirs publics, autour des principaux enjeux du secteur : la lisibilité et la prévisibilité, l'accès à

l'innovation et l'attractivité de l'industrie française. Les orientations du 7e CSIS devront répondre aux défis auxquels sont confrontées les industries de santé.

Davadie, P. et al. (2016). La donnée n'est pas donnée : stratégie & big data, La Grange Buffly : Editions Kawa

La donnée est au cœur de la révolution cyber : tous les outils quotidiens la brassent sans relâche au point qu'elle suscite un nouvel intérêt et qu'elle est à la pointe du débat scientifique : propriété des données, usage des données, localisation des données sont des sujets au goût du jour. Certains estiment même qu'à la guerre de l'information va succéder la guerre des données. Or ces sujets ne peuvent être débattus sereinement que si, au préalable, on a pris la peine de définir ce que le terme recouvre. Cet ouvrage répond à cette question, s'interrogeant sur le sens de la donnée selon les disciplines (économie, informatique, philosophie), puis sur le rôle de la donnée dans l'espace numérique. Il s'attache ensuite à décrire les différentes stratégies de la donnée, que ce soit dans le secteur privé ou dans le secteur public. Il est constitué des actes d'un colloque organisé à l'École Militaire en mars 2015, augmentés de quelques participations originales.

Dini, E. F., et al. (2011). Santé et logement : comment accompagner la Martinique et la Guyane ? Paris Sénat: , tabl.

<http://www.senat.fr/rap/r10-764/r10-7641.pdf>

Dans le cadre de ses travaux de contrôle et d'information, la commission a décidé l'envoi d'une délégation en Martinique et en Guyane pour étudier les questions spécifiques de la santé et du logement. En Martinique, la situation financière très dégradée des hôpitaux a conduit les acteurs locaux, au premier rang desquels l'agence régionale de santé, à décider la fusion des trois principaux établissements en un seul à compter du 1er janvier 2012. A l'approche de l'examen par le Sénat d'une proposition de loi relative à la lutte contre l'habitat indigne dans les départements d'outre-mer, qui a eu lieu début mai, la délégation s'est également attachée à comprendre les spécificités de l'urbanisation de Fort-de-France, marquée par l'édification anarchique et sans droit, à partir des années cinquante, de logements sur des terrains escarpés ou conquis sur la mangrove. En Guyane, la délégation a été frappée par le caractère singulier des problèmes qui se posent à un territoire qui est pourtant un département depuis 1946. Le niveau des services publics y est clairement insuffisant. La situation de l'offre de soins n'y est pas acceptable : déficit de professionnels de santé ; vétusté et exigüité des centres hospitaliers. Rare signe encourageant, la Guyane fait figure de pionnière en matière de télé médecine et l'hexagone pourrait judicieusement s'en inspirer. Par ailleurs, le territoire est parsemé de véritables bidonvilles qui ne font pas honneur à la République. Après le processus de départementalisation, qui a eu tendance à uniformiser les politiques publiques mises en œuvre en métropole et en outre-mer, le temps est venu de les adapter radicalement aux spécificités locales (résumé de l'éditeur)

Dionis du Séjour, J., et Etienne, J. C. (2004). Les télécommunications à haut débit au service du système de santé (2 tomes). Paris Assemblée Nationale: 2 vol. (138 +127).

<http://www.assemblee-nationale.fr/12/pdf/rap-off/i1686-t1.pdf>

<http://www.assemblee-nationale.fr/12/pdf/rap-off/i1686-t2.pdf>

Au moment où l'assurance maladie connaît l'une des crises les plus graves de son histoire et où tous les acteurs du système de soins vont devoir traverser des mutations très importantes, il est important d'évaluer l'apport potentiel des nouvelles technologies de l'information au système de santé français et de cibler les obstacles à leur développement.

Ce rapport sur l'internet à haut débit et les systèmes de santé se trouve au cœur de

l'actualité. Le débat sur la maîtrise des dépenses du système de soins impose de revoir en profondeur l'architecture du système de santé français, qui intègre peu ou pas les nouvelles technologies de l'information.. La première partie porte sur l'outil internet en tant qu'outil de formation et d'information. La deuxième partie aborde la télémédecine sous ces divers aspects : télésurveillance, téléconsultation, téléchirurgie? Le rapport termine sur des recommandations.

Dubreuil, M. (2019). E-Santé : décryptage des pratiques et des enjeux. Paris ORSIF: 32.

<https://www.ors-idf.org/nos-travaux/publications/e-sante.html>

La Région Île-de-France, impliquée dans la mise en place du programme « Smart Région Initiative » a mandaté l'Observatoire régional de santé Île -de-France pour un état des lieux orienté sur les perceptions de l'e-santé, de la part des professionnels de santé et des usagers du système de santé. Ce Focus santé a pour objectif de délimiter les enjeux majeurs. Basée sur une revue de littérature, cette synthèse assemble les éléments de connaissances du champ de l'e-santé dans ses pratiques et ses usages et propose des clés de compréhension d'enjeux émergents à prendre en compte pour préserver la santé comme un bien commun.

Gregoire, O., et al. Livre blanc : 17 experts, 36 propositions pour une politique e-santé ambitieuse, Paris : Renaissance numérique

http://www.renaissancenumerique.org/system/attach_files/files/000/000/104/original/E-Sante-Renaissance_Nume%CC%81rique.pdf?1493195779

Ce rapport publié par Renaissance Numérique est consacré aux enjeux de la e-santé en 2017, et s'appuie notamment sur un sondage réalisé en partenariat avec Médiamétrie, et sur 17 experts qui formulent propositions concrètes et opérationnelles, afin de favoriser le développement de la e- santé en France. Cette étude comporte au total 36 mesures, couvrant les thèmes majeurs de la santé (financement, formation, patients et données). L'objectif est de promouvoir de nouvelles solutions auprès des décideurs publics dans une démarche de dialogue afin de faire bouger les lignes sur cet enjeu d'avenir pour la protection sociale.

Hamel, M. B. et Marguerit, D. (2013). "Analyse des big data. Quels usages, quels défis ?" Note D'analyse (La)(8): 11.

<http://www.strategie.gouv.fr/publications/analyse-big-data-usages-defis>

La multiplication croissante des données produites et le développement d'outils informatiques permettant de les analyser offre d'innombrables possibilités tant pour l'État que pour les entreprises. Il ne fait aucun doute que le traitement de ces masses de données, ou big data, jouera un rôle primordial dans la société de demain, car il trouve des applications dans des domaines aussi variés que les sciences, le marketing, les services client, le développement durable, les transports, la santé, ou encore l'éducation. Par ailleurs, le potentiel économique de ce secteur est indéniable et les retombées en termes d'emploi et de création de richesse seront non négligeables. Son développement nécessite toutefois de bien comprendre les enjeux qui y sont liés. C'est l'objectif de cette note, qui s'attache à détailler ce qu'est l'analyse des big data et présente les usages possibles de ces technologies, qu'il s'agisse de rendre la gestion plus efficace, d'améliorer les services rendus ou de prévenir des phénomènes nuisibles (épidémies, criminalité, etc.). Elle expose les principales difficultés associées à ces usages : garantir la confidentialité et le respect de la vie privée. Enfin, elle montre comment différents pays et entreprises ont d'ores et déjà investi dans ce secteur (résumé d'auteur).

HAS (2019). Évaluer les dispositifs médicaux connectés, y compris ceux faisant appel à l'intelligence artificielle. Saint-Senis HAS: 2 vol. (20 +70).

https://www.has-sante.fr/portail/jcms/c_2905546/fr/evaluer-les-dispositifs-medicaux-connectes-y-compris-ceux-faisant-appel-a-l-intelligence-artificielle?cid=fc_1249599,https://www.has-sante.fr/portail/jcms/c_2845863/fr/specificites-methodologiques-d-evaluation-clinique-des-dispositifs-medicaux-connectes

Ce guide précise les spécificités de l'évaluation clinique à l'attention des industriels qui sollicitent leur remboursement. Si l'évaluation repose sur les mêmes critères que pour tout autre type de dispositif médical, des spécificités liées à leur caractère connecté doivent être prises en compte : rapidité d'évolution de la solution technologique, interactions multiples entre patients, aidants, soignants et autres dispositifs médicaux ou objets, intégration de systèmes experts traitant les données (algorithmes avec ou sans intelligence artificielle).

HAS (2019). Numérique : quelle (r)évolution ? Rapport d'analyse prospective 2019. Paris Haute Autorité de Santé.

La révolution numérique est largement engagée dans le champ de la santé, et s'esquisse dans le champ social et médico-social : accès facilité aux soins et aux accompagnements, mobilisation des données, amélioration des pratiques professionnelles et des parcours, recours à l'intelligence artificielle. Autant de promesses qui imposent d'agir dès à présent pour que le numérique apporte des solutions utiles et efficaces. Ce rapport prospectif développe 29 propositions pour une mobilisation de tous (usagers, professionnels, industriels et Etat) autour de 4 grandes priorités : faire du numérique une opportunité d'inclusion et d'engagement des usagers ; mais aussi un instrument de la mobilisation des professionnels dans un objectif de qualité et de sécurité des pratiques et des parcours ; engager les acteurs dans une évaluation des outils adaptée qui permette à tous de faire les bons choix et renforce la confiance dans le numérique ; et enfin définir des principes généraux pour garantir un bon usage des données et de l'intelligence artificielle.

HCAAM (2016). Avis sur les innovations et système de santé. Document 11 : Le numérique. Paris : Haut Conseil pour l'Avenir de l'Assurance Maladie: 35.

http://www.securite-sociale.fr/IMG/pdf/document_11_-_le_numerique.pdf

Le HCAAM considère que le numérique doit occuper une place majeure dans la réflexion portant sur l'innovation dans le champ de la santé. Il est vrai que les innovations en cours dans ce domaine en pleine évolution, objets connectés, applications mobiles pour ne citer que celles-ci, auront un impact qu'il est important d'étudier sur le système de santé. Mais plus largement, le numérique doit être considéré comme un levier majeur pour la transformation du système de santé, un élément déterminant des innovations organisationnelles aujourd'hui indispensables et du progrès dans le domaine des soins aussi bien que de la prévention.

Hubert, J. et Martineau, F. (2016). Mission Groupements Hospitaliers de Territoire - Rapport de fin de mission. Paris Ministère chargé de la Santé: 51.

http://social-sante.gouv.fr/IMG/pdf/rapport_final_mission_hmdefmodifsddefv150316.pdf

Instaurés par la loi Santé, les GHT ont vocation à développer une prise en charge « graduée » des patients en mutualisant les moyens des établissements au niveau d'un territoire. Le rapport intermédiaire présentait les 20 clés de réussite des GHT avec des premières orientations quant à leur traduction en loi et en décret. Ce rapport final a pour objectif de présenter les orientations définitives pour les textes d'application.

Institut Montaigne (2013). Accès aux soins : en finir avec la fracture territoriale. Paris Institut Montaigne: 73 , tabl., fig.

<http://www.institutmontaigne.org/fr/publications/acces-aux-soins-en-finir-avec-la-fracture-territoriale>

Très onéreux, d'une grande complexité institutionnelle et administrative, le système de soins français pêche également par l'archaïsme de son organisation, caractérisé par de forts cloisonnements entre ville et hôpital comme entre professionnels de santé. Au-delà des problèmes évidents de répartition sur le territoire des professionnels de santé, la question est sans doute plutôt celle du modèle d'organisation des soins en France, qui ne correspond plus aux exigences sociales, démographiques et technologiques de notre pays. Face à ces défis et dans un contexte de finances publiques contraint, comment adapter notre système de santé ? C'est vers une organisation décloisonnée, régionalisée, construite autour des besoins des patients qu'il faut s'orienter. Le système de santé doit également s'adapter aux exigences des nouvelles générations de professionnels de santé et leur offrir les moyens d'exercer leur métier de façon regroupée, en bénéficiant de l'apport des nouvelles technologies.

Isni (2018). Stratégie de transformation du système de santé : Livre blanc, Paris : ISNI

http://www.isni.fr/wp-content/uploads/2018/06/LIVRE_BLANC_ISNI_201805.pdf

Ce Livre blanc livre des constats sur le système de santé, son analyse des évolutions en cours mais y détaille surtout "son ordonnance", une série de propositions répartie en cinq axes : qualité et pertinence des soins, financement et régulation, numérique, formation, transformation des métiers et territoires.

Longeot, J. F. (2019). Projet de loi relatif à l'organisation et à la transformation du système de santé : Avis de la Commission de l'aménagement du territoire et du développement durable. Paris Sénat: 137.

<http://www.senat.fr/rap/a18-515/a18-515.html>

Pour lutter contre les déserts médicaux, la commission de l'aménagement du territoire, saisie pour avis, a proposé un dispositif prévoyant un stage dans les zones sous-denses durant les études de médecine et salue l'adoption par le Sénat d'une disposition instaurant une année de pratique ambulatoire dans le troisième cycle en priorité dans ces zones.

Lopez, A. et Compagnon, C. (2015). Pertinence et efficacité des outils de politique publique visant à favoriser l'observance. Paris, Igas.

<http://www.igas.gouv.fr/IMG/pdf/2015->

[037R_Pertinence_et_efficacite_des_outils_de_politique_publique2_.pdf](http://www.igas.gouv.fr/IMG/pdf/2015-037R_Pertinence_et_efficacite_des_outils_de_politique_publique2_.pdf)

En novembre 2014, le Conseil d'Etat avait annulé "pour incompétence" les deux arrêtés décriés qui liaient la prise en charge de la Sécurité sociale à la bonne utilisation d'un dispositif médical dit à pression positive continue (PPC) pour le traitement des apnées du sommeil. Il s'agissait de placer tous les patients portant ce masque la nuit sous "télé-observance", avec l'emploi des objets connectés. Après cet épisode, la ministre de la Santé Marisol Touraine avait missionné l'IGAS sur l'observance des traitements par les patients, notamment lorsque ils sont atteints d'une maladie chronique. Dans son rapport de juillet 2015, rendu public seulement un an plus tard, la mission "déconseille fortement" de moduler les remboursements des soins en fonction de l'observance des traitements. Outre les difficultés qui seraient rencontrées, notamment pour mesurer l'observance, ce serait s'engager sur une

penne dont le terme et les conséquences sont difficiles à apprécier. En revanche, l'IGAS préconise de développer l'éducation thérapeutique et l'accompagnement des patients, et de "développer une offre de télé-suivi-accompagnement" s'appuyant sur l'essor des appareils connectés, qui vont "profondément modifier l'exercice de la médecine". Le financement de ces services de télé-suivi-accompagnement dépendrait de leur performance, "faisant de la bonne observance et de la fidélisation des patients des marqueurs de la qualité de l'accompagnement".

Lucas, J. et Uzan, S. (2018). Médecins et patients dans le monde des data, des algorithmes et de l'intelligence artificielle. Paris Conseil National de l'Ordre des médecins: 66.

<https://www.conseil-national.medecin.fr/node/2563>

Ce livre blanc explore notamment l'impact actuel et futur des nouvelles technologies pour l'exercice de la médecine, pour la formation initiale et continue des médecins, pour la recherche médicale, et pour la place des patients dans le système de santé. Plus généralement, il appelle à « identifier dès maintenant les risques que la société numérique comporte afin de les combattre tout en soutenant tous les bénéfices qu'elle peut apporter au service de la personne ». Dès lors, le Conseil national de l'Ordre des médecins, pour « accompagner l'ensemble de la profession, dans la diversité de ses exercices », pour « renforcer sa collaboration avec les patients », et pour assurer que les nouvelles technologies soient réellement mises « au service de la personne et de la société », émet 33 recommandations.

Ministère chargé de la Santé (2018). « Faire en sorte que les Applications et Objets Connectés en santé bénéficient à tous ». Avis du 8 février 2018. Paris Ministère chargé de la Santé: 2 vol. (28; 65), fig.

<http://solidarites-sante.gouv.fr/ministere/acteurs/instances-rattachees/conference-nationale-de-sante/avis-et-recommandations/mandature-2015-2019-les-avis-voeux-adoptes/article/faire-en-sort-que-les-applications-et-objets-connectes-en-sante-beneficient-a>

La santé mobile est un secteur prometteur en pleine expansion susceptible de faire évoluer très rapidement les modes d'organisation de notre système de santé et la relation que chacun entretient avec sa santé et les professionnels de santé. Dans ce cadre, la CNS s'est autosaisie pour s'interroger sur la manière dont la révolution numérique en cours pouvait être orientée pour réduire les inégalités de santé et non les accroître. Il formule quatre axes de recommandations : formation et accessibilité; promotion et soutien des outils numériques pour lutter contre les inégalités de santé; respect d'un cadre éthique du développement des objets connectés et des apps; renforcement de la fonction prospective au sein du ministère de la santé en la matière.

Ministère chargé de la Santé (2019). Ma santé 2022 : un engagement collectif. Feuille de route " Accélérer le virage numérique" : Dossier d'information, Paris : Ministère chargé de la santé

https://esante.gouv.fr/sites/default/files/media_entity/documents/190425_Dossier_virage_numerique_masante2022.pdf

Ce dossier présente les grandes orientations de la politique du numérique en santé dans le cadre de la stratégie Ma santé 2022. Les cinq grandes orientations de la politique du numérique en santé dans le cadre de la stratégie Ma santé 2022 sont les suivantes : - renforcer la gouvernance du numérique en santé ; - intensifier la sécurité et l'interopérabilité des systèmes d'information en santé ; - accélérer le déploiement des services numériques socles ; - déployer au niveau national des plateformes numériques de santé ; - soutenir l'innovation et favoriser l'engagement des acteurs.

Ministère chargé de la santé (2018). Ma santé 2022 : un engagement collectif, Paris : Ministère chargé de la santé

https://solidarites-sante.gouv.fr/IMG/pdf/ma_sante_2022_pages_vdef_.pdf

La stratégie, annoncée le 18 septembre 2018 par le président de la République, propose une transformation en profondeur du système de santé autour de 3 engagements prioritaires : Placer le patient au cœur du système et faire de la qualité de sa prise en charge la boussole de la réforme ; Organiser l'articulation entre médecine de ville, médico-social et hôpital pour mieux répondre aux besoins de soins en proximité ; Repenser les métiers et la formation des professionnels de santé. Ce dossier de presse rassemble les propositions du gouvernement français sur le plan de transformation du système de santé à l'Elysée. Quatre mesures emblématiques ont été annoncées : la suppression du numerus clausus dès la rentrée 2020 ; la création de 4.000 postes d'assistant médical d'ici à 2022, avec la mission de décharger les médecins d'actes simples comme la prise de tension ou de température, le suivi des rendez-vous, et des tâches administratives. L'envoi de 400 médecins salariés dans les déserts médicaux. Ils seront recrutés dès l'année prochaine sur la base du volontariat. Et la fin de l'exercice isolé d'ici à 2022 via la mise en place de 1.000 communautés professionnelles de territoire de santé (CPTS). Par ailleurs, la part de la tarification à l'activité sera réduite à 50% des financements hospitaliers en 2022. Deux forfaits pour la prise en charge du diabète et de l'insuffisance rénale seront ainsi créés. Pour l'instant, seul l'hôpital est concerné. La médecine de ville sera ensuite impliquée et d'autres pathologies seront ciblées.

Ministère chargé de la santé (2018). Stratégie de transformation du système de santé, Paris : Ministère chargé de la santé

<http://solidarites-sante.gouv.fr/actualites/presse/dossiers-de-presse/article/lancement-des-travaux-de-la-strategie-de-transformation-du-systeme-de-sante>

Ce dossier présente le projet gouvernemental de transformation du système de santé avec le lancement de cinq chantiers thématique : la qualité et la pertinence, le financement et les rémunérations, le numérique en santé, les ressources humaines et l'organisation territoriale.

Ministère chargé de la Santé (2016). Stratégie nationale pour le développement de l'e-santé : Le numérique au service de la modernisation et de l'efficacité du système de santé, Paris : Ministère chargé de la santé

http://social-sante.gouv.fr/IMG/pdf/strategie_e-sante_2020.pdf

Le Ministère des Affaires sociales et de la Santé vient de publier la Stratégie nationale e-santé 2020. L'objectif de cette stratégie est d'intégrer, de manière innovante, les nouvelles technologies pour améliorer le fonctionnement de notre système de santé. Il s'articule autour de quatre axes. Le premier axe vise à mettre le citoyen au cœur du système de santé, notamment en simplifiant l'accès aux soins et en développant des services favorisant l'autonomie des patients. Le deuxième axe consiste à soutenir l'innovation des professionnels de santé. Il s'agit de développer des cursus de formation autour du numérique, de soutenir les projets en faveur de l'innovation numérique, mais aussi de développer des outils d'aide à la décision médicale. Les mesures du troisième axe entendent simplifier le cadre d'actions pour les acteurs économiques, en clarifiant, notamment, les voies d'accès au marché des solutions e-santé. Enfin, le quatrième et dernier axe concerne la modernisation des outils de notre système de santé, avec l'amélioration des systèmes d'information, de la veille et de la surveillance sanitaire.

Picard, R. et Salgues, B. (2007). TIC et santé: quelle politique publique? Paris CGTI: 19 +annexes.

Irdes - Pôle documentation - Marie-Odile Safon

www.irdes.fr/documentation/syntheses-et-dossiers-bibliographiques.html

www.irdes.fr/documentation/syntheses/e-sante.pdf

www.irdes.fr/documentation/syntheses/e-sante.epub

<http://www.cgti.org/rapports/rapports-2007/rapport-tic-sante.pdf>

Ce rapport analyse la situation de l'emploi des technologies de l'information et des communications (TIC) dans le domaine de la santé. Il est composé de trois parties. Il propose tout d'abord une synthèse des réponses des industriels sur leur vision de la situation française autour des thèmes suivants : forces, faiblesses, opportunités, menaces pour la France; économies possibles par les TIC ; politique industrielle souhaitable. Dans une seconde partie, les éléments précédents sont repris et discutés selon les thèmes récurrents : l'attitude du patient et du médecin, les politiques de santé, de recherche et d'industrie, l'évolution technologique, le cadre réglementaire. Enfin, quelques propositions sont formulées concernant la suite souhaitée par les industriels de ce travail de concertation.

Picard, R. et Vial, A. c. (2013). Prospective organisationnelle pour un usage performant des technologies nouvelles en Santé. Paris C.G.E.I.E.T.: 27.
<https://www.economie.gouv.fr/cge/prospective-organisationnelle-pour-usage-performant-des-technologies-nouvelles-en-sante>

Ce rapport apporte un éclairage prospectif sur les conditions organisationnelles pour un usage performant des technologies nouvelles en Santé, avec un regard particulier sur la télémédecine et plus largement sur la télésanté.

Pieron, L. et Evennou, A. (2017). La santé à l'heure de l'intelligence artificielle. Paris Terra Nova: 131 , tab., graph., fig.

Le monde de la santé est sûrement l'un des secteurs où les enjeux de l'Intelligence Artificielle sont les plus importants. Jusqu'où une machine sera-t-elle capable d'analyser, de diagnostiquer et d'apprendre continuellement ? Quelles formes prendront la collaboration ou le partenariat entre l'homme et la machine? Pourra-t-elle remplacer le professionnel, et si oui dans quelle mesure ? Pipame (2016). E-santé : faire émerger l'offre française en répondant aux besoins présents et futurs des acteurs de santé. Paris : Pôle Interministériel de Prospective et d'Anticipation des Mutations Economiques: 116 , fig., tabl.

Soigner autrement est un impératif de santé publique dans un contexte de vieillissement de la population, d'augmentation des maladies chroniques, d'hyperspécialisation de la médecine, de désertification médicale et d'exigence accrue des patients. C'est également un impératif économique qui touche particulièrement la France dont les dépenses de santé croissent aujourd'hui plus fortement que le PIB. Le système de santé français qui s'est bâti autour de l'hôpital fait face, comme beaucoup d'autres secteurs économiques, à une transformation de son activité impulsée par le numérique. Au-delà de l'informatisation des établissements de santé ou des dossiers patients, les technologies numériques permettent aujourd'hui le développement de nouveaux services dans l'ensemble des domaines de la chaîne de valeur : bien-être, information, prévention, soins ou accompagnement du patient. L'étude dresse un état des lieux des différents segments du marché de l'e-santé, existants ou en développement, qui constitueront demain la croissance industrielle de cette activité encore émergente que ce soit en France, en Europe ou dans le monde. Elle évalue les différents points forts et points faibles de l'offre industrielle française et se penche sur les bonnes pratiques de plus d'une vingtaine de pays. L'étude identifie l'ensemble des leviers structurants permettant de développer une filière industrielle de l'e-santé en France. Elle montre ainsi que la France dispose de tous les atouts pour réussir. Pour autant, de nombreux obstacles demeurent dans les domaines réglementaire et institutionnel, mais également dans l'appropriation des usages par les patients et les professionnels de santé. Comme

souvent avec ces technologies, l'usage par le plus grand nombre constitue la clé de la transformation (résumé de l'éditeur).

Pon, D. et Coury, A. (2018). Stratégie de transformation du système de santé : Accélérer le virage numérique. Rapport final. Paris Ministère chargé de la santé: 32.

https://solidarites-sante.gouv.fr/IMG/pdf/masante2022_rapport_virage_numerique.pdf

Engagés début mars 2018, les travaux sur le chantier « Numérique » de la Stratégie de transformation du Système de santé (STSS), sur le thème « Accélérer le virage numérique », avaient pour objectif d'aboutir pour fin juin 2018 à la production d'une feuille de route opérationnelle couvrant la période 2018-2022 et ayant pour but de renforcer le virage numérique dans le système de santé. Cette note présente, de façon synthétique, les principaux éléments de diagnostic ainsi que des propositions clés élaborées suite aux différentes consultations.

Soudoplatoff, S. (2018). Le numérique au secours de la santé. Paris Fondapol: 37.

<http://www.fondapol.org/etude/le-numerique-au-secours-de-la-sante/>

La technologie joue un rôle important dans bien des aspects de notre vie. Tout comme elle a révolutionné nos méthodes de communication et nos systèmes financiers, son application au domaine de la santé transforme la façon dont les soins sont dispensés. Face à l'évolution de la démographie médicale, aux inégalités territoriales d'accès aux soins, à la hausse de la prévalence des maladies chroniques ou encore au vieillissement de la population et à la prise en charge de la dépendance, les technologies numériques recèlent d'énormes ressources pour améliorer les systèmes de santé. De la santé mobile à la génomique, en passant par l'exploitation des données issues de l'intelligence artificielle et la possible création de notre double numérique, la médecine est sur le point d'être révolutionnée. Dans cette étude, l'auteur se saisit de l'immense potentiel du numérique dans le domaine de la santé en le faisant vivre à travers les dernières innovations, dont il faut suivre le pas à l'échelle nationale.

Syntec Numérique (2018). Lois et plans d'actions pluriannuels en santé. Quels enseignements tirer des expériences internationales ? Paris Syntec numérique: 42 , tabl., fig.

<https://syntec->

[numerique.fr/sites/default/files/Documents/2018_Etude_Syntec_numerique_SIA_Partners-lois_et_plans_daction_en_sante_0.pdf](https://syntec-numerique.fr/sites/default/files/Documents/2018_Etude_Syntec_numerique_SIA_Partners-lois_et_plans_daction_en_sante_0.pdf)

A l'heure où les pouvoirs publics affirment leur volonté d'accélérer le virage numérique en santé, identifié comme chantier prioritaire dans la Stratégie de transformation du système de santé présentée le 13 février 2018, Syntec Numérique a souhaité se pencher sur les conditions effectives permettant de réussir cette transformation, qu'il s'agisse de financement, de portage politique ou encore d'objectifs concrets. Dans cette perspective, l'étude analyse les lois et plans d'action pluriannuels en santé mis en œuvre par des pays de différentes zones du monde. Malgré d'importantes différences dans l'organisation de leur système de santé, tous ces pays ont lancé des programmes ambitieux en matière de santé numérique, avec des caractéristiques communes. L'étude montre également tout l'intérêt de prévoir une programmation pluriannuelle des dépenses de l'État, pour une durée de 5 ans, sur le modèle des lois de programmation militaire. En effet, le déploiement d'une stratégie ambitieuse sur 5 ans, avec des objectifs précis, quantifiables et évalués annuellement, est un prérequis pour réussir la transformation numérique de notre système de santé (d'après l'introduction).

Villani, C. (2018). Donner un sens à l'intelligence artificielle. Pour une stratégie nationale et européenne. Paris Conseil National du numérique: 233.

https://www.ladocumentationfrancaise.fr/docfra/rapport_telechargement/var/storage/rapports-publics/184000159.pdf

Ce document identifie quatre secteurs prioritaires où la France doit particulièrement concentrer son effort de développement de l'intelligence artificielle : la défense, les transports, l'environnement et la santé. En matière de santé, l'intelligence artificielle ouvre des perspectives très prometteuses pour améliorer la qualité des soins au bénéfice du patient et réduire leur coût – à travers une prise en charge plus personnalisée et prédictive – mais également leur sécurité – grâce à un appui renforcé à la décision médicale et une meilleure traçabilité. Elle peut également contribuer à améliorer l'accès aux soins des citoyens, grâce à des dispositifs de prédiagnostic médical ou d'aide à l'orientation dans le parcours de soin. Près de vingt ans après la création de la base nationale des données médico-administratives (SNIIRAM), la France doit à nouveau faire figure de pionnière en investissant massivement dans les capacités de recherche et d'innovation en matière d'IA appliquée à la santé. Ces capacités reposent à la fois sur la mise en place de systèmes adaptés aux usages liés à l'IA visant à plateformiser le domaine, des procédures d'accès aux données plus fluides et un cadre pour expérimenter « en conditions réelles » les solutions émergentes. L'appropriation de l'IA en santé dépend également de notre capacité à accompagner les patients et professionnels de santé dans la transformation des pratiques médicales, ainsi qu'à structurer et animer en continu un débat national sur les usages éthiques de l'IA en santé

ÉTUDES FRANÇAISES

(2018). "E-santé : les régions en action." *Dsih : Le Magazine De La Transformation Numérique En Santé*(23): 66 , tab., graph., fig., carte.

Ce dossier fait le bilan du déploiement de la e-santé dans les régions françaises. La France de la e-santé se caractérise par une grande variété de projets, guidés par la diversité du maillage territorial, des besoins en santé publique et des ressources démographiques.

(2012). "Technologies et avancée en âge." *Gérontologie Et Société*(141): 219.

Alors que l'introduction des aides techniques au domicile des personnes âgées en perte d'autonomie continue de rencontrer de nombreux obstacles, les technologies de l'information et de la communication (TIC) ont largement pénétré au cœur des usages de presque toutes les tranches d'âge de la population. Cette révolution a pu se faire grâce à la fiabilité des équipements, à leur large distribution et à la satisfaction de besoins anciens et nouveaux qu'elles permettent. Toutefois, la déclinaison de ces technologies grand public pour des personnes aux besoins physiologiques ou cognitifs spécifiques en reste encore trop souvent au stade de l'expérimentation et du prototype et sans réflexion approfondie des industriels sur les utilisateurs finaux et leurs modes de vie. Dans le champ de la gérontologie, les TIC connaissent depuis quelques années des développements importants centrés sur les enjeux de sécurité du malade âgé et de son parcours de vie. Les réticences commencent à se lever en partie grâce à une réflexion éthique qui inclut l'ensemble des acteurs de la démarche. (extrait du RA).

(2015). "La e-santé." *Gestions Hospitalières*(551): 594-623.

Le dossier propose plusieurs témoignages d'expériences réussies en e-santé : celle du réseau Vigilance, créé en 2007 dans les Deux-Sèvres, pour l'aide au maintien à domicile des personnes dépendantes ; celle du Réseau Vercors Santé, lancé en 2001 et destiné à pallier la pénurie de professionnels de santé sur le territoire du Vercors ; celle du réseau de santé gérontologique Cormadom Lyon, créé en 2004, ou bien encore celles du projet Infomed dans le canton du Valais en Suisse ; des plateformes Medaviz et MesVaccins.net. Toutes ces expériences ont en commun le fait d'être assez anciennes et de perdurer, et d'avoir été initiées par des professionnels déjà sensibilisés par leur pratique et leur engagement aux problématiques de coopération et de coordination. Ces professionnels ont su s'approprier les outils adéquats pour améliorer les situations existantes. Cependant, malgré la volonté des acteurs de terrain, certains obstacles demeurent à la mise en

œuvre de projets de e-santé, comme les clivages institutionnels, le fonctionnement bureaucratique de l'offre de soins.

Adeoti, F.-M. (2018). "Systèmes de santé : L'apport déterminant de l'e-santé et des technologies du numérique." *Gestions Hospitalières*(575): 285-288.

[BDSP. Notice produite par EHESP R0xIJGnq. Diffusion soumise à autorisation]. Le défi posé aux pays africains en termes de développement du secteur de la santé reste le renforcement des systèmes nationaux de santé dans toutes leurs composantes en vue de fournir des prestations durables, de qualité, dans un environnement de garantie de sécurité, accessibles géographiquement et financièrement pour tous. Pour relever ce défi, les ministères en charge de la Santé ont besoin de rationaliser leurs dépenses, de mutualiser l'utilisation des infrastructures, de bien former et employer leur personnel, de rapprocher les populations des structures sanitaires, de mettre en place des infrastructures et un plateau technique médical appropriés, et d'assurer une meilleure prévention et prise en charge des maladies épidémiques. Les États africains se sont inscrits aussi dans l'atteinte de plusieurs objectifs mentionnés dans des agendas internationaux, en particulier la couverture santé universelle et le développement durable. La cybersanté a été identifiée comme outil transversal pouvant contribuer au renforcement des systèmes nationaux de santé. (R.A.).

Alajouanine, G. (2010). "Tic et Territoires. Un label Haute Sécurité Santé." *Gestions Hospitalières*(495): 222-.

[BDSP. Notice produite par EHESP HR0xoltG. Diffusion soumise à autorisation]. Ghislaine ALAJOUANINE, Présidente de la commission Galien, Haut Conseil pour la télésanté et des coopérations francophones, décrit la télésanté en sept vertus : 1. Un enjeu, une ambition ; 2. Une force de mobilisation ; 3. La croissance pour faire de la France un leader mondial dans le domaine de la télésanté au service du citoyen ; 4. Un développement durable pour une prise en charge et des soins sûrs, sains et durables via le concept du HS2 ; 5. La réponse à une meilleure prise en charge, un mieux être du patient et 6/7 L'équilibre entre vie sociale et vie économique.

Allaert, F. A., et al. (2016). "Les enjeux de la sécurité des objets connectés et applications de santé." *Journal De Gestion Et D'économie Médicales* **34**(5-6): 311-319.

[BDSP. Notice produite par ORSRA R0xEq8oE. Diffusion soumise à autorisation]. Le marché des objets connectés et des applications de santé (OCS) est en plein essor et devrait représenter plusieurs milliards d'euros de chiffre d'affaires dans les prochaines années. Leur développement aura un impact similaire à ce que nous avons connu avec le développement d'internet au début de ce siècle mais plus encore il devrait bouleverser l'organisation de notre système de santé, changer profondément les modalités de prise en charge des patients et révolutionner la prévention, mais il pourrait aussi remettre en question le secret médical et la protection des données personnelles. Cet article analyse les conséquences sociétales des OCS, la nécessité d'une double évaluation médicale et éthique et l'impérative nécessité de l'établissement d'un référentiel de sécurité auxquels pourront se conformer les industriels dans l'optique d'un contrôle non pas a priori mais a posteriori pour ne pas bloquer l'innovation.

APSSIS (2014). Vade-Mecum des objets connectés. Paris : Association pour la Promotion de la Sécurité des Systèmes d'Information de Santé: 102.

<http://www.apssis.com/#/publications-apssis/4395697>

Ce document, publié par l'Association pour la promotion de la sécurité des systèmes d'information de santé (APSSIS), est composé de 12 chapitres. Il rappelle d'abord le contexte législatif et réglementaire du marché, donne la parole à quatre experts sur le sujet : le Dr Jacques Lucas, vice-président du Conseil national de l'Ordre des médecins, Gérard Peliks et Hervé Lehning, de l'Association des réservistes du chiffre et de la sécurité de l'information (ARCSI), et Uwe Diegel, vice-président de la société iHealthLabs. Sont présentées ensuite 120 applications destinées aux professionnels de santé ou au grand public, détaillées dans quatre chapitres : "Welcome dans la e-santé", "Sport et santé: le e-mariage", "La e-santé de nos enfants" et "La e-santé de nos seniors". Une partie paroles d'experts, de médecins, chiffres, statistiques et tendances complète ce document.

ASIP (2010). Rapport d'activité d'ASIP Santé 2009. Paris ASIP Santé: 81.

Dans son premier rapport d'activité, l'ASIP Santé fait état des missions de l'agence pour répondre aux enjeux de développement des systèmes d'information de santé, et dresse le bilan des actions menées au cours de l'année

2009. Ce document établit également le paysage de la e-santé en France, au regard de la nouvelle gouvernance instituée, des attentes des patients et des besoins des professionnels de santé, et met en lumière le travail mené par les acteurs qui œuvrent aujourd'hui à son développement.

Astier, K. (2010). "Tic et Territoires. Projet Hôpital virtuel." *Gestions Hospitalières*(495): 230-.

[BDSP. Notice produite par EHESP m8R0x9mn. Diffusion soumise à autorisation]. Cet article présente brièvement le projet Hôpital virtuel réalisé dans le cadre du programme d'éducation et de formation tout au long de la vie de l'Union européenne (LLL2007-2013). Cette plateforme d'e-learning est une véritable innovation technique pour la formation initiale des infirmiers. Identification des enjeux pédagogiques et professionnels pour ce nouvel outil arrivé à l'IFSI.

Azzi, J., et al. (2017). "Lorraine. E-santé et coopération multisite. Une réponse aux déserts médicaux." *Revue Hospitalière De France*(576): 22-23.

[BDSP. Notice produite par EHESP sEBR0xA9. Diffusion soumise à autorisation]. Permettre un accès aux soins équitable et rapide, un recours à des médecins spécialistes dans les déserts médicaux, tel est le nouveau défi du système de soins français. Avec le soutien du groupement de coopération sanitaire Télésanté Lorraine, l'hôpital Saint-Jacques de Dieuze organise, en partenariat avec la clinique Claude-Bernard de Metz et le CHRU de Nancy, des séances de dépistage de la rétinopathie diabétique à distance et des téléconsultations gériatriques. (R.A.).

Babinet, G. et Vassoyan, R. (2015). Big data et objets connectés Faire de la France un champion de la révolution numérique. Paris Institut Montaigne: 211 , fig.

[http://www.institutmontaigne.org/res/files/publications/rapport%20objets%20connecte%CC%81s\(1\).pdf](http://www.institutmontaigne.org/res/files/publications/rapport%20objets%20connecte%CC%81s(1).pdf)

La révolution du Big data et des objets connectés crée d'immenses perspectives de création de valeur mais suscite également des interrogations nouvelles sur la protection des droits des individus. Pour renforcer la confiance entre les acteurs et soutenir le développement de modèles économiques innovants, les différentes parties prenantes doivent saisir les opportunités offertes et travailler en confiance. Les réflexions de ce rapport portent sur cinq axes majeurs : les enjeux économiques pour la France ; la nécessité d'une gouvernance adaptée intégrant notamment les sujets de transparence et de standardisation ; l'adaptation des compétences et des ressources humaines aux besoins nouveaux liés au développement des objets connectés et du Big data ; l'amélioration de la performance et de la pérennité des solutions technologiques ; la régulation des usages et la protection de la vie privée et des données sensibles destinée à maintenir la confiance comme facteur clef de succès de la révolution des objets et du Big data.

Baudot, P. Y., et al. (2015). "Open et big data." *Informations Sociales*(191): 115.

https://www.caf.fr/sites/default/files/cnaf/20160406_CPIS191.pdf

Le mouvement d'ouverture des données administratives, appelé « open data » ou « données ouvertes », participe à la réforme de l'État. La notion de « big data » (« données massives »), souvent associée au terme d'open data, relève d'une toute autre démarche. Celle-ci vise à exploiter sous un angle nouveau des données créées à l'origine pour une finalité déterminée. Le big data désigne également le travail d'enrichissement des données par leur croisement, par exemple en appariant différentes sources statistiques pour lier l'observation de comportements d'usage et des données sur le profil socio-économique des personnes. Ce numéro de la revue Informations sociales cherche tout d'abord à comprendre les raisons de l'ouverture des données mais aussi à évaluer l'impact de ce mouvement sur les acteurs de l'action publique. Le soutien politique à cette démarche est motivé par la relégitimation des pratiques de gouvernement que permettrait l'ouverture des données, celles-ci rendant plus transparente l'action des pouvoirs publics. Les opérations d'informatisation nécessaires à la production de données de qualité impliquent une transformation des modalités d'organisation et des périmètres professionnels des administrations comme de leur contrôle. La spécificité du secteur social en matière d'ouverture des données publiques et d'usage des données massives peut ainsi être interrogée tant sur le plan juridique qu'économique.

Beau, P. et Marceau, J. (2014). "Santé et numérique, le passage à l'acte !" *Espace Social Europeen*(1058): 4-7.

[BDSP. Notice produite par EHESP nAR0xHGc. Diffusion soumise à autorisation]. La France va-t-elle s'investir, enfin, dans la transformation numérique de son économie ? Le secteur de la santé, 12% du PIB, prendra-t-il sa part dans cette mutation majeure ? Celle-ci détient des atouts considérables comme la personnalisation, l'autonomie et l'efficacité des soins, mais comporte également des risques dont l'emploi, la sécurité des données et les missions des professionnels ne sont pas les moindres.

Beguïn-Kerboul, M., et al. (2014). "Numérique en santé. Dans l'océan Indien, des applications diversifiées." Revue Hospitalière De France(561): 28-33.

[BDSP. Notice produite par EHESP AR0xJ89m. Diffusion soumise à autorisation]. Petit tour d'horizon des différentes applications de la télémédecine dans l'océan indien, et plus particulièrement sur l'île de la Réunion : le déploiement de la télémédecine répond à une problématique récurrente du secteur géographique, qui est celui de l'accès aux soins en territoire montagneux. Elle permet également de renforcer le système de soins par le développement de la télésurveillance dans la prévention des maladies chroniques telles que le diabète. Le CHU de La Réunion et d'autres établissements hospitaliers témoignent des expériences mises en place.

Benasayag, M., et al. (2017). "Santé connectée." Pratiques : Les Cahiers De La Médecine Utopique(79): 94 , tab., graph., fig.

Les nouvelles technologies permettent le développement de multiples objets connectés dans la santé. Certains offrent des avantages, mais ne sont pas sans effet sur les conditions de soins et l'évolution des pratiques. Les auteurs de ce dossier sur la santé connectée explorent les nouvelles possibilités ainsi ouvertes, les changements qu'elles produisent ainsi que les risques auxquels elles exposent. La banalisation de la diffusion volontaire des données de santé sur les réseaux sociaux, comme l'utilisation par les administrations de données sensibles "anonymisées", nourrissent le "Big Data" dont on est loin d'imaginer la portée réelle sur l'évolution de la société. Ce fascicule apporte des éclairages sur d'autres aspects de la santé.

Beranger, J. (2015). "E-santé, m-health, big data médicaux : Vers une hiérarchisation des données médicales." Revue Hospitalière De France(562): 70-74.

[BDSP. Notice produite par EHESP 8R0x79I8. Diffusion soumise à autorisation]. Face à la déferlante des données médicales numériques via les objets connectés (e-santé), les applications mobiles (m-health), la télémédecine et les big data médicaux, il importe de rester vigilant. Où sont stockées les données médicales personnelles ? Sont-elles sécurisées ? Quelles données sont accessibles au patient ? La solution de hiérarchisation sélective des données de santé vue à travers le prisme éthique permet de mieux appréhender l'équilibre instable entre la disponibilité et la protection des données.

Bergeron, S. (2005). "Le bracelet anti-disparition Columba pour personnes avec déficits cognitifs et le système d'alarme cardiaque portable VPS - des percées dans le domaine de la télésécurité médicale personnelle." Gérontologie Et Société(113): 71-81, fig.

[BDSP. Notice produite par FNG zR0xHyZk. Diffusion soumise à autorisation]. Les percées technologiques dans le domaine de la miniaturisation permettent l'arrivée d'une nouvelle vague en télémédecine : la télésécurité médicale personnelle. Ce nouveau domaine en émergence est fondé sur l'utilisation d'appareils médicaux portables de monitoring pour utilisation à domicile, comportant des logiciels intelligents d'analyse, et permettant la transmission automatisée d'alertes à des centrales d'assistance médicalisées lors de la reconnaissance d'anomalies sérieuses, sans intervention de la part du patient. Les premiers domaines visés par les entreprises qui oeuvrent dans ce secteur touchent principalement les personnes âgées, et les premiers appareils de la compagnie Médical Intelligence, le VPS - un système d'alarme cardiaque portable à ECG 12 dérivations, et le Columba - un bracelet anti-disparition pour personne présentant des déficits cognitifs, devraient être disponibles dans les prochains mois en France.

Bernard, C., et al. (2013). La Silver Economie, une opportunité de croissance pour la France. Rapports & documents. Paris CGSP: 112.

En 2005, un Français sur cinq était âgé de plus de 60 ans. En 2035, la proportion sera de un sur trois. Le nombre des seniors devrait connaître une hausse de 80 %. Ce vieillissement de nos sociétés a suscité de nombreux

travaux mettant en évidence les enjeux et les risques que représente une telle mutation démographique. La plupart abordent la question par l'angle sociétal ou médicosocial. Ce rapport a pour originalité de se fixer pour objet la valeur économique que peut receler le vieillissement. La proportion accrue de seniors va-t-elle servir de levier à des pans entiers de notre économie, qu'il s'agisse des services ou des technologies avancées, du type robotique ou domotique ? Peut-on envisager de bâtir une « industrie », au sens large du terme, qui valorise au mieux cette évolution majeure ? Si oui, quel rôle l'État doit-il y jouer ? (résumé d'auteur).

Beuscart, R. (2000). Rapport sur les enjeux de la société de l'information dans le domaine de la santé. Paris PAGSI ([http //www.mtic.pm.gouv.fr/dossiers/documents/schema/sante.doc](http://www.mtic.pm.gouv.fr/dossiers/documents/schema/sante.doc): (50).

http://www.medcost.fr/media/textes/pdf/pdf_si/beuscart.pdf

L'objectif de ce rapport est de dresser un état des lieux de la société de l'information dans le domaine de la santé, et d'analyser plus particulièrement le développement des NTIC (nouvelles technologies de l'information et de la communication). Il examine quatre dimensions essentielles : la télémédecine, qui permet à plusieurs professionnels de santé de communiquer pour favoriser la prise en charge d'un patient donné dans le cadre d'une démarche diagnostique ou thérapeutique ; les filières et réseaux de professionnels de santé, qui facilitent la communication d'information entre professionnels et malades ; la e-santé, qui donne accès au grand public et aux patients au monde de la santé grâce à internet ; la formation médicale continue grâce aux NTIC. Il termine sur des recommandations.

Boudy, J. (2007). "Recherche et développement. Technologies de l'information, handicap et gérontologie." *Revue Hospitalière De France*(515): 54-59, graph.

[BDSP. Notice produite par ENSP 5R0xpraW. Diffusion soumise à autorisation]. Face au double défi du vieillissement de la population et de la montée en charge des dépenses de santé, l'emploi des technologies de l'information et de la communication ouvre un champ d'applications nouvelles dans l'assistance et le suivi de personnes malades, dépendantes, handicapées ou à mobilité réduite. Le Groupe des écoles des télécommunications (GET) a développé une très forte compétence en systèmes électroniques, réseaux, traitement de signal et d'images et en sociologie des TIC. Plusieurs projets de recherche sont pilotés par ses laboratoires dans les domaines de l'assistance : télémédecine et télésurveillance médicale, assistance au handicap, maintien du lien social. Le développement de ces systèmes exige un partenariat étroit entre les équipes médicales (INSERM, hôpitaux, CHU...), les laboratoires et les industriels. Il soulève, outre les problèmes techniques, des questions d'acceptabilité, de confidentialité, de modèles économiques et de régulation. Ses chercheurs présentent à titre d'exemple, l'application des TIC à la télévigilance (ou télésurveillance médicale).

Bourgeon, L., Penciolelli, J.-F., Roche, J., et al. (2018). "Santé : La révolution numérique. Dossier." *Gestions Hospitalières*(575): 212-288, fig.

[BDSP. Notice produite par EHESP R0xIII8. Diffusion soumise à autorisation]. Le "digital", ces technologies de l'information et de la communication, ou technologies numériques, et leurs différentes applications, bouleverse quotidiennement nos vies personnelles et professionnelles. Ce numéro de Gestions hospitalières explore les enjeux et les perspectives de la transformation digitale des institutions et organisations de santé. Sont ainsi abordées différentes problématiques liées au digital, présentées par niveau d'analyse. Le premier niveau concerne le patient et sa relation à la maladie. Le deuxième est celui de la relation patient. Il s'agit d'étudier sous différents angles dans quelle mesure le digital change la place du patient et, surtout, modifie ses relations avec les professionnels de santé. Un troisième niveau d'analyse concerne les établissements et organisations de santé eux-mêmes. (extrait introd.).

Brouard, B. (2017). "Chapitre 2. Utilisation des Big Data en santé : le cas des objets connectés." *Journal International de Bioéthique* **28**(3): 27-30.

<https://www.cairn.info/revue-journal-international-de-bioethique-2017-3-page-27.htm>

Selon le rapport « The Internet of Things Market », le nombre d'objets connectés devrait être de 68 milliards en 2020. De plus, en 2012, le total des données stockées dans le monde était de 500 petabytes. Après la course à la puissance de calcul puis au développement des réseaux, l'enjeu réside désormais dans le stockage de ces données dans le « cloud », mais aussi et surtout, à libérer leur accès (open data) et à les traiter rapidement et

en masse (Big Data). L'utilisation de ces données à bon escient est un enjeu majeur pour la recherche et la santé publique.

Bubien, Y., et al. (2015). "E-santé : Groupe de recherche et d'applications hospitalières (Graph) Méditerranée - Octobre 2015." Gestions Hospitalières(551): 624-633.

[BDSP. Notice produite par EHESP pR0x8n7o. Diffusion soumise à autorisation]. Le séminaire du Groupe de recherche et d'applications hospitalières (Graph) Méditerranée qui s'est tenu du 15 au 17 octobre 2015 avait pour thématique le développement et les usages de l'e-santé en France. Les trois articles de ce dossier rendent compte de façon synthétique des réflexions qui ont animé cette rencontre : la santé connectée porte de nombreux progrès et réponses face aux évolutions épidémiologiques, démographiques et sociétales, et transforme le rôle des acteurs traditionnels de santé, cependant elle se heurte à des obstacles d'ordre éthiques, ou bien culturels et économiques.

Caillette-Beaudoin, A., et al. (2010). "Maladies chroniques cardiovasculaires et métaboliques : apports de la télé-médecine." Revue Hospitalière De France(532): 29-31, graph.

[BDSP. Notice produite par EHESP R0xBD888. Diffusion soumise à autorisation]. La télésurveillance des maladies chroniques montre sa capacité à optimiser la qualité et la sécurité des soins dans de nombreuses pathologies. Illustration avec une expérience menée en Rhône-Alpes auprès de patients insuffisants rénaux chroniques.

Calderan, L., et al. Big data : nouvelles partitions de l'information. Actes du séminaire IST Inria, octobre 2014, Louvain-la-Neuve : De Boeck ; Paris : ADBS

Le Big Data est omniprésent dans les médias. Qualifié de source d'innovation, de richesses, de création d'emplois, d'enjeu démocratique quand il est « open », le Big Data fascine et effraye à la fois. Mais de quoi parle-t-on exactement ? Ces données massives sont-elles du seul domaine des informaticiens, des statisticiens, des politiques et des créateurs d'entreprises ? Les professionnels de l'information-documentation n'ont-ils pas un rôle à jouer dans ce nouveau paysage : identification, qualification, archivage, classification ? Cet ouvrage rassemble les contributions de spécialistes issus de diverses disciplines et réunis au colloque Inria en octobre 2014. Dans le flou lié à la mutation profonde que connaît actuellement le paysage informationnel, ils donnent les clés pour appréhender ce nouveau domaine et pour percevoir la place réservée aux compétences métier de l'information-documentation.

Cambon, L. (2016). "Objets connectés, mobiles, communicants en prévention : dépasser l'outil, penser l'intervention." Sante Publique **28**(1): 5-6.

[BDSP. Notice produite par EHESP BFR0x7Hp. Diffusion soumise à autorisation]. Cet article propose de s'interroger sur ce que l'on peut attendre ou craindre des objets connectés en termes d'impact et au regard des libertés. En effet, ces objets transmettent des données dont l'utilisation reste peu encadrée, même si en Europe, un règlement sur la protection des données personnelles devrait apporter une forme d'encadrement. En effet, la technologie peut se révéler une contrainte, un support discriminatoire ou porter atteinte à l'intimité, en étant par exemple utilisée à des fins de profilage commercial. En outre, s'il s'agit de normaliser les comportements plutôt que de développer l'empowerment, la question de cet usage ne pourra s'affranchir des questionnements éthiques sous-jacents à toute démarche préventive utilisant des ressorts normatifs.

Catel (2014). Préconisations e-santé 2014. Livre blanc du Catel. Paris CATEL: 72.

<http://www.catel.pro/documents/LivreBlanc/livre-blanc-version-completeV2.pdf>

<http://www.catel.pro/documents/LivreBlanc/livre-blanc-version-synthetique.pdf>

Cet ouvrage constitue une synthèse de réflexions collectives et de préconisations pour le développement de la e-santé, identifiées entre janvier et décembre 2013 par le groupe de travail multidisciplinaire coordonné par le Club des acteurs de la télésanté (CATEL) et constitué d'institutionnels, de chercheurs, d'associations, de professionnels de santé et d'industriels. 12 préconisations résultent des analyses détaillées. Elles ont été élaborées à partir des 5 thématiques suivantes : La e-santé: un concept global et évolutif ; La e-santé: un

paradigme nouveau centré sur les usages ; La e-santé: un cadre législatif, réglementaire et économique à compléter ; Une gouvernance et une méthode adaptées à la e-santé ; Innovation et industrialisation pour une e-santé ouverte et internationale.

Chambaud, L. (2016). "Le système de santé français à l'épreuve des transitions." Socio : La Nouvelle Revue Des Sciences Sociales(6): 157-170.

<https://socio.revues.org/2300>

Cet article s'intéresse au concept d'integrated care, traduit par la notion d' « intégration des soins et des services » qui tend à s'imposer dans la littérature des études sur la santé, la maladie, les soins. Ce concept, qui peut être rapproché de la notion de parcours de soins actuellement prôné en France, aide à dépasser le clivage habituel entre le cure et le care, entre le soin et l'accompagnement. Sa mise en œuvre s'appuie sur un changement paradigmatique en cours à partir d'un phénomène de transition combinant cinq domaines : transition épidémiologique – avec la chronicisation de la plupart des maladies graves ; transition démographique, qui promeut la notion de service à la personne, préventif/curatif, accompagnement ; transition professionnelle, qui passe par les jeunes professionnels de santé ; transition technologique, non spécifique au monde de la santé mais qui la réalise, ne serait-ce qu'avec les technologies qui bousculent les prises en charge, ou le dépistage ; transition démocratique, dont on retrouve la trace dans le droit des malades des années 2000 et lors de l'émergence de concepts nouveaux comme le malade-expert ou l'éducation thérapeutique. Les enjeux actuels et les obstacles à cette évolution de notre système de santé sont discutés.

Chevallaz-Perrier, C. et Blouet, P. (2012). "L'engagement d'une entreprise dans le champ de la santé et des nouvelles technologies." Gérontologie Et Société(141): 147-162, fig.

[BDSP. Notice produite par FNG mrsR0xAp. Diffusion soumise à autorisation]. L'évolution des technologies est une formidable opportunité pour offrir des solutions innovantes pour permettre d'accompagner de façon efficace et humaine les populations vieillissantes. Les sociétés de haute technologie se mettent de plus en plus à l'écoute des différents acteurs des mondes médicaux et médico-sociaux pour offrir des solutions intégrables et adaptées. Cette volonté sociétale et industrielle s'accompagne d'une recherche d'efficacité en réutilisant les expériences et les produits du marché grand public tout en s'intégrant à un nouvel écosystème où les différents acteurs apprennent à travailler ensemble. (R.A.).

CISS (2016). Le numérique en santé. « Pour un patient acteur de la qualité de son parcours de santé ». Paris : Collectif Interassociatif sur la Santé: 43 , tabl., ill., fig.

Le CISS propose de promouvoir les usages utiles du numérique en santé dans un contexte de développement de l'économie de services, tout en rappelant l'existence des risques ainsi que la nécessité d'adapter notre système aux vigilances requises par la dématérialisation massive des données personnelles.

Cornet, G. (2005). "Technologies au service du soin." Gérontologie Et Société(113): 160.

[BDSP. Notice produite par FNG rR5R0rxr. Diffusion soumise à autorisation]. Les technologies au service du soin et de l'autonomie des personnes âgées, et leur potentiel de développement, offrent à une population vieillissante des perspectives pour une meilleure qualité de vie au quotidien. Ce fascicule fait le point sur certaines technologies disponibles et émergentes et éclaire le débat sur ses différents aspects. Conçu à partir de la journée universitaire organisée, en mai 2004, à la Pitié Salpêtrière, sous l'égide de l'Institut Universitaire de Gérontologie Yves Mémin, de la Société Française de Gériatrie et de Gérontologie et de l'Université Paris-VI, il reprend et complète l'essentiel des contributions.

CSIS (2015). GT 33 CSIS---CSF : Permettre l'émergence d'une stratégie industrielle en matière de e-santé, En soutien de la politique de santé publique, en associant les industriels. Lever les freins au déploiement de la télémédecine. Paris : Conseil Stratégique des Industries de Santé: (261), annexes.

Le Contrat de Filière Industries et Technologies de Santé, conclu en juillet 2013 entre l'Etat et les représentants de fédérations industrielles, comporte une mesure (dite « mesure 33 ») dédiée à faciliter le développement de la e-santé, reconnue comme filière d'avenir stratégique à fort potentiel de développement. Le groupe de travail mixte (« GT 33 »), chargé de la mise en œuvre de ces engagements a associé les représentants des

pouvoirs publics (DGOS, DSSIS, DGE, DGRI, ASIP Santé, ANAP, HAS, CNAMTS, ANSM) et des syndicats industriels (SNITEM, Syntec Numérique) sous la co-présidence de Pierre LEURENT (Syntec Numérique et SNITEM) et de Philippe BURNEL (ministère des Affaires sociales, de la Santé et des Droits des femmes). Il rend public aujourd'hui son rapport d'activité et annonce un ensemble d'engagements visant à faciliter le déploiement de la télémédecine.

CSIS (2016). GT 28 CSF. Créer les conditions d'un développement vertueux des objets connectés et des applications mobiles en santé. Paris : Conseil Stratégique des Industries de Santé: (214), annexes.

<http://social-sante.gouv.fr/systeme-de-sante-et-medico-social/e-sante/article/objets-connectes-et-applications-mobiles-en-sante>

Le ministère des Affaires sociales et de la Santé (Délégation à la Stratégie des Systèmes d'Information de Santé), le ministère de l'Économie, de l'Industrie et du Numérique, et les Fédérations d'industriels regroupés au sein de l'alliance eHealth France (SNITEM, LESSIS, Syntec Numérique, LEEM, FEIMA) ont achevé leurs travaux dans le cadre du Comité Stratégique de Filière Santé et publient le rapport élaboré par le groupe de travail sur la thématique de la santé mobile (GT 28). Afin de « Créer les conditions d'un développement vertueux des objets connectés et des applications mobiles en santé », ils proposent la mise en œuvre d'un référentiel de labellisation avec un focus sur la fiabilité médicale, la protection des données et la cybersécurité.

CSIS (2016). Rapport du Conseil stratégique des industries de santé. Paris : Conseil stratégique des industries de santé 63.

Le Conseil stratégique des industries de santé, espace de concertation et d'échanges entre les industriels du secteur et les pouvoirs publics, est le lieu où se dessine une vision stratégique partagée. A la suite du séminaire du 17 avril 2015, ouvert par le Premier ministre, trois groupes de travail ont été mis en place : ils ont réuni les industriels et les pouvoirs publics, autour des principaux enjeux du secteur : la lisibilité et la prévisibilité, l'accès à l'innovation et l'attractivité de l'industrie française. Les orientations du 7e CSIS devront répondre aux défis auxquels sont confrontées les industries de santé.

Dabi, F. et Pratviel, E. (2017). Les Français et les objets connectés : sondage Ifop. Paris IFOP: 2 vol. (32 +10).

<http://solidarites-sante.gouv.fr/ministere/acteurs/instances-rattachees/conference-nationale-de-sante/debats-publics/debat-citoyen-sur-la-sante-connectee-2017/article/objets-connectes-et-applications-en-sante-evolution-de-la-relation>

Réalisée à la demande du Ministère chargé de la santé, cette étude de l'Ifop rassemble les résultats d'une enquête menée en 2017 auprès des Français pour recueillir leur avis concernant l'usage des objets connectés. L'analyse tient compte des facteurs socio-démographiques et socio-économiques, de l'origine géographique et du type de matériel utilisé.

Dahan, C. et Benzaken, S. (2015). "Accompagner la révolution numérique : Former les professionnels et les patients." *Gestions Hospitalières*(544): 137-139.

[BDSP. Notice produite par EHESP 9o0R0xGI. Diffusion soumise à autorisation]. L'environnement numérique dans le domaine de la santé bouleverse les pratiques des professionnels. Cette révolution des outils, des modes de raisonnement et des modèles relationnels nécessite un accompagnement. En 2014, la communauté interhospitalière PACA-Est a organisé des formations sur la "e-santé" ouvert à un public large réunissant professionnels de santé hospitaliers ou libéraux, personnels hospitaliers administratifs ou techniques, patients, représentants d'usagers. Trois thèmes ont été abordés au cours de modules d'une demi-journée organisés au CHU de Nice : la e-santé dans la relation thérapeutique, la sécurité et la confidentialité des données numériques en santé, l'hôpital numérique dans le processus de certification dans les établissements de santé.

Dangaix, D. et Rolland, C. (2012). "La téléphonie-santé est un outil qui fait partie d'un ensemble Interview." *Sante De L'homme (La)*(422): 26-.

[BDSP. Notice produite par INPES ntsBR0xE. Diffusion soumise à autorisation]. Au service d'écoute téléphonique de l'association Asthme & Allergies, les patients appellent pour en savoir plus sur leur maladie et

être conseillés et orientés quant à leur prise en charge thérapeutique. Des patients souvent déboussolés, en manque d'information. Entretien avec Christine Rolland, directrice de l'association.

Davadie, P. et al. (2016). La donnée n'est pas donnée : stratégie & big data, La Grange Buffly : Editions Kawa

La donnée est au cœur de la révolution cyber : tous les outils quotidiens la brassent sans relâche au point qu'elle suscite un nouvel intérêt et qu'elle est à la pointe du débat scientifique : propriété des données, usage des données, localisation des données sont des sujets au goût du jour. Certains estiment même qu'à la guerre de l'information va succéder la guerre des données. Or ces sujets ne peuvent être débattus sereinement que si, au préalable, on a pris la peine de définir ce que le terme recouvre. Cet ouvrage répond à cette question, s'interrogeant sur le sens de la donnée selon les disciplines (économie, informatique, philosophie), puis sur le rôle de la donnée dans l'espace numérique. Il s'attache ensuite à décrire les différentes stratégies de la donnée, que ce soit dans le secteur privé ou dans le secteur public. Il est constitué des actes d'un colloque organisé à l'École Militaire en mars 2015, augmentés de quelques participations originales.

De Block, M. (2015). "Optimistic. Une stratégie territoriale e-santé." Revue Hospitalière De France(567): 14-16.

[BDSP. Notice produite par EHESP oR0xJIG8. Diffusion soumise à autorisation]. Les apports de la télémédecine à la lutte contre les déserts médicaux sont aujourd'hui reconnus par les médias spécialisés et un grand public informé. Les stratégies communément dénommées "e-santé" sont-elles, pour autant, une évidence pour les établissements de santé ? L'expérience du centre hospitalier de Troyes (CHT) illustre l'importance des prérequis, et d'un processus d'évolution, pour le déploiement de ces stratégies.

DGOS (2013). Direction générale de l'offre de soins. Rapport d'activité 2012. Paris DGOS: 88.

http://www.sante.gouv.fr/IMG/pdf/DGOS_RA_2012.pdf

Ce rapport retrace la mise en œuvre des nombreuses actions conduites par la Direction générale de l'offre de soins (DGOS) dans le champ de l'offre de soins en 2012. Il apporte un éclairage utile et précis sur la diversité des missions qui sont remplies au quotidien par cette direction et ses quelque 300 agents au service de la santé des Français.

Dimeglio, C., et al. (2015). "Big data et santé publique : plus que jamais, les enjeux de la connaissance." Actualité Et Dossier En Sante Publique(93): 5-7.

[BDSP. Notice produite par EHESP A8ER0x9s. Diffusion soumise à autorisation]. De nombreuses bases de données existent dans le domaine de la santé. Quelles données intégrer ? Comment s'assurer de leur fiabilité ? Pour quelle utilité avec quels risques ? (introd.).

Dunand, J. M. et Dreyer, P. (2012). "Faciliter l'usage des nouvelles technologies pour tous et dans la e-santé." Gérontologie Et Société(141): 163-170.

[BDSP. Notice produite par FNG InGR0xD7. Diffusion soumise à autorisation]. Opérateur connu de téléphonie mobile ou fixe, SFR est aussi un opérateur de services Internet et de nouvelles technologies. Comptant un Français sur deux client de l'entreprise, cette dernière se doit de décrypter les nouvelles technologies, d'en faciliter les usages et de les rendre accessibles au plus grand nombre (technophiles ou non, individus en bonne santé ou fragilisés, jeunes ou moins jeunes, etc.) et ce, dans tous les domaines, y compris celui de la santé. Présente sur les différents marchés, Grand Public, Pro et TPE, PME et Grandes Entreprises, Institutionnels et Collectivités, l'entreprise cherche constamment à apporter à chacun de ses clients des solutions adaptées. (R.A.).

Durand-Salmon, F. et Le Tallec, L. (2016). "La E-santé, quels nouveaux usages ?" Problemes Economiques(3127): 33-37, tab., graph.

Cet article est une reprise partielle d'un article paru dans les Annales des Mines - Réalités industrielles de novembre 2014. La santé mobile englobe l'ensemble des technologies individuelles en matière de santé. Elle bénéficie du développement des réseaux, des nouvelles solutions de communication et de la création de

nombreux objets connectés. Le vieillissement de la population et l'augmentation des maladies chroniques relèguent désormais au second rang les traditionnelles maladies transmissibles infectieuses, obligeant à modifier l'approche en santé publique. Cette nouvelle approche replace l'individu-patient au cœur de la prévention et du soin et réclame de ce dernier une participation active. Elle modifie également la relation entre le patient et les professionnels de santé qui l'accompagnent.

Durousseaud, J.-C. (2014). "Numérique en santé. Télémedecine. Homo connectus." Revue Hospitalière De France(561): 26-27.

[BDSP. Notice produite par EHESP qFR0xpKA. Diffusion soumise à autorisation]. Les entretiens médicaux d'Enghien réunissent chaque année les acteurs du monde de la santé, de l'innovation et les décideurs de la sphère politique. L'édition 2014 était consacrée à la télémedecine et a été l'occasion de débats entre les "pour" et les "contre" - Freins, opportunités et évolutions sont résumés ici et laissent au final une vision optimiste et positive du développement de la télémedecine pour le système de santé français.

Fainzang, S. (2017). "Patients, médecins et santé connectée." Pratiques : Les Cahiers De La Médecine Utopique(79): 32-34.

Cet article aborde la e-santé sous l'angle de la relation médecin patient, qui évolue avec l'accès de ce dernier à Internet et aux objets connectés, en fonction de l'usage qu'il fait de ces outils.

Favereau, E., et al. (2006). "Information et santé : dossier." Sève : Les Tribunes De La Sante(9): 21-91.

La société de l'information submerge le système de santé. Les digues édifiées sur le secret médical et le colloque singulier menacent de céder sous le déferlement de l'information sanitaire. L'e-santé est un des moteurs du développement d'internet, la presse santé envahit les kiosques, l'informatisation des dossiers médicaux se généralise dans de nombreux pays. L'évolution se fait non sans mal : la carte vitale a mis douze ans à s'imposer, l'accès direct au dossier médical date de 2002. Sève souhaite, dans ce numéro, apporter sa contribution à l'indispensable analyse critique des enjeux et des effets de la transformation qui s'accomplit depuis plusieurs années. La société d'Hippocrate pourra-t-elle cohabiter avec la société de l'information.

Fay, A. F. et Fery-Lemonnier, E. (2000). Innovations technologiques et plan stratégique 2001-2004. Dossier CEDIT : 99-12. Paris CEDIT: 23 , tabl.

Le Comité d'Evaluation et de Diffusion des Innovations Technologiques (CEDIT) a été saisi par la Directrice de la Politique médicale de l'Assistance publique de Paris pour une identification des grandes évolutions technologiques susceptibles d'émerger ou de se développer de façon importante pendant la période du plan stratégique 2001-2004 de l'AP - HP. Il a été prévu de s'efforcer d'identifier celles nécessitant un accompagnement au cours du plan stratégique, notamment par la constitution de dossiers de demandes de financements ou d'autorisations auprès des tutelles. Ce petit document a donc pour objectif de présenter les résultats de cette mission : définition du champ de travail, collecte d'informations, réalisation de listes de technologies innovantes, et parmi ces listes, choix de spécialités médicales les plus concernées par le développement technologique.

Fromentin, V. (éd.) (2017). "Cybersécurité : nos données de santé sont-elles en sécurité ?" Lettre De Galilee (La)(N° H.S. 3): 20 , tab., graph., fig.

Avec 6,4 milliards d'objets déjà connectés, reliés à Internet, et 5,5 millions nouveaux appareils qui sont installés par jour, l'Internet des objets (IoT) constitue une cible de prédilection pour les pirates. Le 21 octobre 2016, la société Dyn aux États-Unis en a fait les frais en essuyant une attaque qui a paralysé de nombreux sites Internet comme CNN, The Guardian, Netflix ou Twitter. Le pirate avait réussi à prendre le contrôle de 100 000 caméras. Avec l'arrivée des voitures connectées, des brosses à dents ou des bracelets connectés, la menace est prise au sérieux par l'Union Européenne. La Haute Autorité de Santé a publié un guide de recommandations pour les applis santé. Faut-il vraiment craindre les objets connectés ?

Gagneux, M., et al. (2010). "Construire l'hôpital numérique." Gestions Hospitalières(495): 200-275, tabl., fig., carte.

[BDSP. Notice produite par EHESP B9R0x9DC. Diffusion soumise à autorisation]. Depuis la mise en place en avril 2009 du Programme de relance du DMP et des systèmes d'information partagés de santé, la modernisation et le développement des systèmes d'information de santé sont devenus des priorités nationales. C'est dans ce contexte que la réforme de la gouvernance des systèmes d'information de santé a alors commencé. Elle a notamment permis la création de l'Agence des systèmes partagés de santé (ASIP santé) et de l'Agence Nationale d'appui à la performance hospitalière (ANAP), toutes deux chargées de la maîtrise d'ouvrage publique du développement de ces nouveaux systèmes. Depuis le 14 avril 2010, cette nouvelle politique publique est lancée. La première réunion du comité stratégique du programme "hôpital numérique" a fixé les priorités d'action pour la mise en œuvre de ce plan dont les enjeux pour le soin deviennent capitaux : organisation et gestion des établissements de santé, performance du système de soins, partage des données médicales, coordination des différents acteurs santé, qualité et sécurité des soins... Ce dossier présente une vingtaine d'articles organisés en trois thématiques. Le premier thème "Tic et territoires" revient sur les enjeux de la mise en place des systèmes d'information de santé au niveau régional. Ceci notamment à travers le Dossier Médical Personnel et le développement de la télé médecine. Le deuxième thème "Tic et Hôpital" s'attache à identifier les enjeux de l'utilisation des nouvelles technologies de l'information au sein des hôpitaux sur différents angles de vue : conception architecturale, investissement, formation du personnel, évaluation de la performance, droit médical... Le dernier thème "Tic et Gouvernance" porte sur la gouvernance du risque liée à l'utilisation des nouvelles technologies de l'information en santé.

Garel, P. (2013). "L'e-santé dans l'agenda de la Fédération européenne des hôpitaux (HOPE)." Revue Hospitalière De France(550): 18-.

[BDSP. Notice produite par EHESP 8sR0xrrE. Diffusion soumise à autorisation]. La Fédération européenne des hôpitaux et soins de santé (HOPE) participe activement depuis 2005 aux travaux e-santé de la Commission européenne, et plus particulièrement aux missions de sa direction générale, Connect. La Commission a dévoilé début décembre 2012 un nouveau plan d'actions.

Gattaz, P. (2008). Une stratégie industrielle pour les marchés du futur : la croissance se construit ensemble. Paris FIEEC: 113 +110.

Et si la réponse au marasme de l'économie numérique, entre autres dans le domaine de la santé, venait d'un partenariat entre le public et le privé ? A en juger par la synthèse qu'en fait le site de Lessis, c'est la certitude qui apparaît clairement dans le rapport publié par la puissante Fédération des industries Electriques, Electroniques et de Communication (FIEEC), qui regroupe près de 2000 entreprises spécialisées. Ce rapport, commandé par le gouvernement et remis le 24 juin à Luc Chatel, ministre délégué à l'Industrie, visait à identifier les vecteurs d'innovation dans le domaine des TIC et de l'électronique. La santé est l'un des trois secteurs d'innovation porteurs identifiés. Focalisés sur les retards de la France, les experts du groupe « Santé » ont mis en évidence la nécessité d'un pilotage commun entre le gouvernement et les industriels. La levée des obstacles juridiques et administratifs qui entravent le développement de la santé à distance constitue également un préalable au développement de ce marché. Enfin, selon les auteurs, une prospérité du marché des TIC de santé est conditionnée à la mise en œuvre d'une gouvernance interministérielle paritaire public/privé.

Gharbi, L., et al. (2015). "Ouverture de la journée "Enjeux et opportunités du numérique". Dossier." Regards De La Fhp(34): 6-37, ill.

[BDSP. Notice produite par EHESP 88R0xtCr. Diffusion soumise à autorisation]. Ce dossier est consacré à la journée d'information sur les "Enjeux et opportunités du numérique". Il fait le bilan à mi-parcours du programme Hôpital numérique.

Girault, D., et al. (2013). "Dossier. L'hôpital numérique." Gestions Hospitalières(526): 272-316.

[BDSP. Notice produite par EHESP A897AR0x. Diffusion soumise à autorisation]. La bonne santé de l'économie constitue un facteur clé de l'amélioration de la santé de la population. Le séminaire organisé conjointement par le centre hospitalier de l'université de Montréal et "Gestions hospitalières" les 10 et 11 juin traitera de l'évolution du modèle économique de référence et de la création de richesse, notamment du coût de la santé et de sa valorisation économique. Les articles de ce numéro font une large place au développement de l'e.

santé, vécu à la fois comme une opportunité de développement économique et une réponse à la désertification de certains territoires et à la progression des pathologies chroniques de populations vieillissantes.

Gouget, B., et al. (2004). "TIC, télésanté et e-santé : hôpital expo-intermédiaca 2004." Techniques Hospitalières(688): 9-22, phot.

[BDSP. Notice produite par APHPDOC jZ5R0xhq. Diffusion soumise à autorisation]. "Parmi les innovations réussies de l'e-santé en ligne figurent notamment les réseaux d'information médicale, les dossiers médicaux électroniques, les cartes de soins de santé, les services de télé-médecine, les systèmes portables et ambulatoires dotés de fonctions de communication qui fournissent des outils d'assistance à la prévention, au diagnostic, au traitement, au monitoring de la santé et à la gestion du mode de vie, et les portails sur la santé." Ce dossier comporte les thèmes suivants : - E-santé, enjeu de santé publique, - l'observatoire des réseaux de télésanté, - domotique et technologies de télé-assistance médico-sociale au domicile : une vision d'avenir, - révolution ou évolution : le mobile urgence médicale.

Gros, J. (2002). "Santé et nouvelles technologies de l'information." Avis Et Rapports Du Conseil Économique Et Social(5): 92 , ann.

Les nouvelles technologies de l'information - télé-médecine, e-santé, cartes à puces - bouleversent profondément les pratiques dans le secteur de la santé. Cette évolution est riche de potentialités pour tous les acteurs, mais suscite aussi des appréhensions. Les moyens à mettre en œuvre pour encourager ces progrès, le respect des droits de la personne, la sécurité informatique, la qualité des services proposés sur le web, la finalité même de ces outils constituent autant d'interrogations. Le Conseil économique et social définit huit axes de propositions, afin que les NTIC contribuent pleinement à l'amélioration de la santé.

Gruson, D. (2016). "Wall-E vs Skynet : Où va la robotisation/digitalisation du système de soins ?" Revue Hospitalière De France(571): 46-47.

[BDSP. Notice produite par EHESP 8jR0x888. Diffusion soumise à autorisation]. Les possibilités offertes par la transformation numérique en santé sont très étendues. Si les risques qu'induit cette mutation existent, notamment une fragilisation de la relation de soin, nous avons tout à gagner à nous défaire d'un principe de précaution érigé et à accompagner ce virage numérique pour améliorer l'efficacité de notre système de soins.

Hansske, A. et Boutet-Rixe, C. (2013). "Innovations et numérique en santé." Revue Hospitalière De France(552): 30-35.

[BDSP. Notice produite par EHESP CGR0x8Bk. Diffusion soumise à autorisation]. L'agence régionale de santé de Picardie a retenu le déploiement de la télé-médecine comme axe prioritaire de son programme régional de télé-médecine. Ce chantier est confié au groupement de coopération sanitaire e-santé Picardie, qui déploie la plateforme urbanisée de télé-médecine Comedi-e (coopération médicale innovante en e-santé). Lancée en décembre 2011, Comedi-e est une plateforme de services e-santé qui s'adresse aux établissements sanitaires et médico-sociaux, professionnels de santé et patients dont l'accès aux soins est fragilisé par l'isolement, ou le manque de praticiens.

HAS (2007). Évaluation de la qualité des sites e-santé et de la qualité de l'information de santé diffusée sur Internet. Revue de la littérature des outils d'évaluation. Enquêtes et études: 87.

http://www.has-sante.fr/portail/upload/docs/application/pdf/evaluation_qualite_site_sante_internet.pdf

[BDSP. Notice produite par HAS H7FR0xHk. Diffusion soumise à autorisation]. Ce document est un catalogue non exhaustif des "outils" et critères d'évaluation de la qualité des sites e-santé. Il différencie schématiquement les outils comme suit : - les recommandations et/ou codes de bonne conduite destinés essentiellement aux promoteurs de sites Web dans le cadre d'un processus d'attribution d'un label ou d'une procédure de certification ; - les codes de bonne conduite et recommandations destinés a priori aux promoteurs de sites et aux professionnels de santé ; - les grilles d'évaluation donnant lieu à une cotation et des

recommandations destinées à l'internaute ou au promoteur d'un site ou encore aux étudiants et professionnels de santé.

Hecketsweiler, C. (2016). "Les docteurs 3.0 de la Silicon Valley (Le Monde Eco & entreprise)." Problemes Economiques(3127): 25-32, tab., graph.

Cet article est une reprise partielle d'un article paru dans le Monde Eco & entreprise du 8 septembre 2015 avec en sus, l'éclairage apporté par Problèmes économiques. Les nouvelles technologies de l'information sont aujourd'hui en passe de révolutionner la médecine et la recherche pharmaceutique. Les géants de l'informatique et de l'internet comme Google, Amazon, Apple, Microsoft se sont en effet lancés à la conquête du secteur de la santé.

Hermesse, J., et al. (2002). "Accessibilité aux soins et nouvelles technologies." Sante Et Systemique 6(1-2-3): 347.

Ce fascicule présente des contributions originales sur quatre problèmes qui sont actuellement au centre des préoccupations de tous ceux qui travaillent sur le thème du système de santé, quel que soit leur champ disciplinaire principal, qu'ils soient producteurs de soins, gestionnaires, économistes, juristes ou sociologues : accessibilité aux soins et nouvelles technologies, sécurité et qualité des soins, place du patient dans le système de santé, économie des nouvelles technologies en santé. En amont se situe le problème de l'accessibilité aux soins. Contrairement à ce qu'on pourrait penser, même aujourd'hui dans les pays développés, l'égalité d'accès aux soins est loin d'être acquise et il est tout à fait possible de mettre en évidence certains des facteurs limitatifs de cet accès.

Hill, N. (2018). "Une vision de la santé connectée." Gestions Hospitalières(575): 250-251.

[BDSP. Notice produite par EHESP sAR0xClI. Diffusion soumise à autorisation]. Le secteur de la santé entre dans une deuxième phase de transformation numérique, une phase qui dépasse les dossiers médicaux électroniques (DME) puisque les technologies jouent désormais un rôle prépondérant à toutes les étapes du parcours du patient. Le moment est venu d'exploiter pleinement le potentiel de ces technologies en construisant une stratégie de transformation numérique adaptée aux établissements de santé. Il est nécessaire d'adopter une approche réseau offrant mobilité, connectivité et sécurité à chacune des étapes du parcours de soins dans l'établissement.

Kleinebreil, L., et al. (2010). "Tic et Territoires. Le programme e-Diabète." Gestions Hospitalières(495): 228-229.

[BDSP. Notice produite par EHESP GIROx8Hp. Diffusion soumise à autorisation]. Développé par l'Université numérique francophone mondiale (UNFM), le programme e-diabète vise à combler le déficit de formation des professionnels de santé en Afrique, où le diabète constitue un nouveau fardeau à prendre compte. Comme l'ensemble des maladies chroniques, l'incidence du diabète ne cesse d'augmenter en Afrique, et il est urgent que les professionnels de santé soient en mesure de le diagnostiquer et de le traiter, quel que soit leur niveau dans la pyramide sanitaire. L'enjeu est la réduction de la mortalité par diabète, ainsi que ses conséquences les plus sévères comme l'amputation ou les maladies cardio-vasculaires. Pour répondre à cette urgence sanitaire, l'UNFM s'est associée au Réseau en Afrique francophone pour la télémédecine (Raft) dont la couverture s'étend à une quinzaine de pays, pour mettre en place un cycle de téléconférences mensuelles pouvant être suivies par les professionnels de santé. (R.A.).

Le Calve, L. (2010). "Tic et Hôpital. Le droit médical sous l'angle de la télémédecine." Gestions Hospitalières(495): 264-266.

[BDSP. Notice produite par EHESP 8HmR0x8J. Diffusion soumise à autorisation]. Depuis la loi n°2009-279 du 21 juillet 2009, Hôpital, Patients, Santé, Territoires, la télémédecine est rentrée officiellement dans le code de la santé publique. Le télémédecine, un acte de médecine réalisé à distance, reste comme tout acte médical assujettie à des règles déontologiques et des obligations appliquées aux professionnels de santé. Cet article rappelle les principes de la relation patient-médecin : Secret médical, information et consentement du patient qui, au-delà de la virtualisation des données médicales, restent les fondamentaux de la pratiques médicales.

Le Rouzic, M. (2018). "L'intelligence artificielle en santé." *Gestions Hospitalières*(575): 263-264.

[BDSP. Notice produite par EHESP R0xq8mop. Diffusion soumise à autorisation]. Médecine prédictive, chatbots médicaux, analyses comportementales, aide au développement de nouveaux traitements : l'intelligence artificielle (IA) offre un immense potentiel pour accompagner la santé dans sa transition numérique. L'objectif commun des acteurs qui développent des applications d'intelligence artificielle pour la médecine est d'arriver à prévenir la maladie afin de la combattre plus efficacement. (R.A.).

Lestienne, A., et al. (2001). "Santé 2020 : l'apport des technologies nouvelles dans le système de soins." *Technologie Et Sante*(44): 96 , tabl.

[BDSP. Notice produite par ENSP 2WR0xAE6. Diffusion soumise à autorisation]. Ce numéro "Technologie de Santé" apporte des éléments sur ce que pourrait être la médecine de 2020 grâce à la collaboration de courageux experts.

Librault, D. Chambaud, L., Revil, H., et al. (2018). "De l'accès aux soins à l'accès aux services." *Regards* **53**(1): 178 , tab. graph., fig.

<https://en3s.fr/portail-documentaire/en3s-contributions-regards-colloques-manuels/revues-regards/>,

<https://www.cairn.info/revue-regards-2018-1.htm>

Si elle est récurrente et toujours aussi cruciale pour le jugement que l'on peut porter sur la qualité du système social français, la problématique de l'accès aux droits et aux soins change sans doute un peu de nature. En premier lieu le numérique apparaît tout à la fois comme un formidable levier facilitateur, tant dans la possibilité de guichet unique virtuel (portail des droits sociaux) que comme un outil de circulation des données autorisant dans un futur proche une quasi « automatisation » de reconnaissance des droits. Mais, on le sait, le numérique peut aussi créer de nouvelles barrières, supprimer des contacts humains, exclure ceux qui - temporairement ou définitivement - ne sont pas à l'aise où n'ont pas la disponibilité, tout simplement, de ces outils. En deuxième lieu, face à l'évolution des risques sociaux et sanitaires, qui concernent de plus en plus des parcours de vie, la notion d'accompagnement devient cruciale. Le rôle du service public, et notamment des caisses, est amené à évoluer fortement. Cette mutation ne sera pas possible sans un travail en profondeur sur les ressources humaines des caisses, par le biais notamment de la formation. Enfin la notion de disponibilité de l'offre devient cruciale. Il ne suffit pas d'avoir des droits monétaires, il ne suffit même pas que l'offre de soins existe à proximité, encore faut-il qu'elle soit disponible, notamment pour tout ce qui relève des soins non programmés, qui ne sont pas tous nécessairement des « urgences ». Retrouver une réelle disponibilité de l'offre de soins sur tout le territoire devient prioritaire et passe sans doute par des politiques beaucoup plus affirmées d'encouragement au développement d'une offre non programmée en ville, à l'instar de ce qui commence avec les Maisons de santé pluridisciplinaires. Organiser l'offre de soins et réaliser l'accès aux droits deviennent de plus en plus les deux faces d'une même politique, cette organisation de l'offre de soins sur un territoire étant aussi potentiellement pourvoyeuse de gains d'efficacité pour le système. Donc, d'une certaine façon, le diagnostic et les solutions à mettre en place pour notre système de santé et de protection sociale sont relativement aisés à concevoir. Et pour autant les avancées sont timides et pas à la hauteur des enjeux. Essentiellement parce que les organisations ne sont pas au rendez-vous. Le système français trop en silos n'est pas fait pour porter et mettre en œuvre cette exigence de décloison

Messner, L., et al. (2013). "Système d'information en santé. Dossier." *Revue Hospitalière De France*(550): 10-25, fig.

[BDSP. Notice produite par EHESP E7mER0xq. Diffusion soumise à autorisation]. Programme "hôpital numérique" piloté par la direction générale des soins, plan européen e-santé 2012-2020, projet Mines-Télécom relatif aux équipements e-santé dans les EHPAD. ce dossier présente les différents projets nationaux ou européens en cours dans le domaine des systèmes d'information en santé, se penche sur les freins aux partages d'information entre secteurs sanitaire et médico-social et offre également un regard sur une expérience étrangère à la pointe : la mise en place d'un dossier patient informatisé de territoire au Danemark.

Pinaud, F. (2014). "E-santé : mieux soigner les malades et... la Sécu." *Tribune (La)*(73): 14-19, tabl., graph., fig.

http://www.lesiss.org/offres/file_inline_src/445/445_P_31543_1.pdf

Cet article de la Tribune, solidement documenté, dresse un tableau panoramique du numérique de santé. Astucieusement intitulé « E-santé : Mieux soigner le malade ... et la sécu », son auteure y rappelle la situation économique du système de santé, évoque les déboires des grands projets en cours ou prévus annoncés par les pouvoirs publics, mais également les formidables opportunités portées par le savoir-faire des entreprises françaises. En outre, si plus de la moitié des Français voient dans les outils technologiques un levier pour mieux gérer leur santé, les obstacles ne manquent pas, entre autres concernant l'inefficacité de la gouvernance et l'inertie de certains des acteurs concernés. Heureusement le ciel commence à se dégager, sous la pression combinée d'une mobilisation croissante des patients et des réalités économiques. Avec l'appui de la capacité d'innovation des entreprises françaises.

Puech, M. (2012). "E-santé : De l'innovation "TIC" à l'innovation éthique." Revue Hospitalière De France(546): 76-77.

[BDSP. Notice produite par EHESP 9HGCR0x8. Diffusion soumise à autorisation]. Ce texte propose d'apporter une contribution sur les questions de l'e-santé en interrogeant la part éthique et philosophique de ces innovations technologiques. Si nous innovons technologiquement, nous devons aussi innover éthiquement, or souvent, nous sous-estimons la dimension "philosophique" de l'innovation technologique. L'auteur prône une "alliance souhaitable entre Hippocrate et e-Socrate".

Renaissance Numérique. (2014). D'un système de santé curatif à un modèle préventif grâce aux outils numériques : livre blanc. Paris Renaissance numérique: 124.

<https://www.renaissancenumerique.org/publications/d-un-modele-de-sante-curative-a-un-modele-preventif-grace-aux-outils-numeriques>

Le numérique a permis un saut quantitatif et qualitatif jamais égalé dans notre connaissance des individus, de leurs pratiques santé et bien être, et dans leur accompagnement personnel au quotidien. Alors que les assurances s'emparent aujourd'hui des nouvelles technologies objets connectés, applications mobiles et Big Data, l'Assurance Maladie pourrait, elle aussi, investir ces outils numériques pour constituer un levier efficace afin d'orienter son modèle vers un paradigme davantage préventif. Dans ce livre blanc, Renaissance Numérique fournit un état des lieux des pratiques internationales et un témoignage d'experts permettant d'analyser les moyens d'action possibles pour que l'acteur public opère une telle transition numérique vers un modèle préventif. Le think tank formule 16 propositions couvrant un large spectre de problématiques pour assurer la transition vers un système de santé préventif, allant de la formation des professionnels de santé à des solutions Big Data de lutte contre la fraude à la Sécurité sociale. Parmi les mesures phares de ce rapport : Établir un système de labellisation des applications mobiles santé, des objets connectés et des dispositifs machine to machine pour garantir leur fiabilité et permettre leur utilisation par les professionnels de santé; Donner aux communautés de patients la possibilité, selon des critères définis, d'obtenir un statut d'association de patients pour leur permettre de devenir des acteurs de la démocratie sanitaire; Organiser une concertation nationale avec les acteurs publics, la CNIL, les représentants professionnels des assurances et les associations de patients et consommateurs pour encadrer le risque de pratiques bonus-malus santé par les assurances privées, qui pourraient induire des inégalités dans l'accès aux soins.

Reynaudi, M. et Sauneron, S. (2011). "Quelles opportunités pour l'offre de soins de demain ? (volet 2). La télésanté." Note D'analyse (La)(255): 11 , graph.

<http://archives.strategie.gouv.fr/cas/content/notes-danalyse-254-et-255-quelle-offre-de-soins-demain-les-opportunités-offertes-par-la-tele.html>

A quoi ressemblera l'offre de santé en France dans vingt ans ? Les défis sanitaires sont nombreux : hausse des maladies chroniques, vieillissement de la population, évolution de la démographie médicale, etc. Pour y répondre, deux leviers d'action sont disponibles. D'une part, le développement des coopérations entre professionnels de santé, sujet traité dans le premier volet de ce mini-dossier consacré à la santé demain. D'autre part, la production de soins à distance grâce aux technologies de l'information et de la communication (TIC) : on parle alors de télésanté. Aujourd'hui, son potentiel reste à exploiter. Elle demeure un secteur émergent, confronté à des freins juridiques, économiques et culturels. Lever ces obstacles permettra de passer d'expériences éparses, nées sous l'impulsion de quelques acteurs, à un déploiement plus ambitieux. Dans un schéma idéal, l'apport de la télésanté ne se cantonnera pas à la dématérialisation des procédures existantes. Elle sera aussi à l'origine d'un saut qualitatif en engendrant de nouveaux services, des pratiques plus collégiales

et une réorganisation des structures sanitaires selon leur degré de spécialisation. Ainsi, la télésanté donnera corps à un continuum de soins, contribuant à l'orientation optimale du patient dans un système intégré couvrant domicile, soins primaires et aigus, soins de suite et médico-sociaux. Enfin, les TIC contribueront à faire de l'utilisateur un coproducteur de santé.

Rial-Sebbag, E. (2017). "Chapitre 4. La gouvernance des Big data utilisées en santé, un enjeu national et international." *Journal International de Bioéthique* 28(3): 39-50.

<https://www.cairn.info/revue-journal-international-de-bioethique-2017-3-page-39.htm>

L'utilisation des données de santé est de plus en plus considérée comme un enjeu central pour la recherche mais également pour le soin. La génération de ces données est une valeur ajoutée pour la conduite d'études à grande échelle, elle est même considérée comme une (r)évolution dans la méthodologie de la recherche ou encore la médecine personnalisée. Plusieurs facteurs ont influencé l'accélération de l'utilisation des données de santé (progrès de la génétique, de la technologie, diversification des sources) conduisant à re-questionner les principes juridiques posés pour la protection des données de santé tant en droit français qu'en droit européen. En effet, premièrement, la production de masse (Big Data) de données dans le champ de la santé influe sur la quantité et la qualité des données venant dès lors reconfigurer les outils de protection de la vie privée en insistant sur le risque informationnel. Deuxièmement, l'utilisation de ces données repose quant à elle sur des principes fondamentaux existants tout en soulevant de nouveaux challenges pour leur gouvernance.

Rubinstein, B. (2017). "Objets connectés, traçabilité et sécurité : La vigilance à 360°." *Gestions Hospitalières*(565): 234-238, fig.

[BDSP. Notice produite par EHESP BrROxpsk. Diffusion soumise à autorisation]. Si le facteur humain est et restera toujours la principale cause de risque sécuritaire, il est toutefois essentiel d'appréhender la réalité infiniment complexe des multiples attaques, cibles et facteurs de risque auxquels est confronté aujourd'hui l'hôpital 2.0. "Pour les organisations du monde de la santé, la question n'est plus de savoir si elles vont se faire attaquer, mais quand." L'auteur de cette prédiction alarmiste, et pourtant réaliste, est Lynne A. Dunbrack, vice-présidente des recherches à l'institut IDC Health Insights. Le Groupe Prisme milite depuis plusieurs années déjà pour une vigilance à 360° et une vision holistique des politiques de traçabilité et de sécurisation des biens, des personnes et des flux physiques et numériques associés, afin de parer à ces menaces. Son président présente ici les risques liés aux attaques informatiques soulignant les problématiques liées aux objets connectés et aux dispositifs médicaux modernes qui sont, de par leur vulnérabilité, de nouveaux chevaux de Troie disséminés dans l'hôpital.

Salengro, B. (2011). "La révolution industrielle du traitement de l'information à la Caisse nationale d'Assurance maladie'." *Regards*(40): 10-19.

Cet article présente le bilan et les projets de la Caisse nationale d'Assurance maladie en matière de traitement de l'information.

Savoldelli, M. et Lareng, L. (2010). "Télémédecine et pratique médicale collaborative : enjeux et préalables." *Revue Hospitalière De France*(532): 19-24, carte.

[BDSP. Notice produite par EHESP qR0xn8k8. Diffusion soumise à autorisation]. Enjeux et préalables de la télémédecine dans l'exercice médical : En quoi impacte-t-elle les pratiques et cultures médicales, mais aussi paramédicales ? L'organisation de l'offre de soins ? La relation au patient ? Quelles sont ses modalités opérationnelles ? Les missions et activités de support ? Sa place dans les futurs espaces numériques régionaux de santé ?

Scala, B. (2016). "E-santé : la médecine à l'ère du numérique." *Science & Santé*(29): 33-33, tab., graph., fig.

Pour le grand public, la e-santé - pour "santé électronique" - évoque essentiellement la santé connectée, celle qui fait appel à l'internet des objets et aux applications pour smartphones. Et pour cause, ces nouvelles technologies sont majoritairement destinées au grand public, en bonne santé, et non aux malades. Cependant, c'est aussi par ce biais que ce même grand public se familiarise avec un pan plus médical de la e-santé. Ce dossier fait le point sur ce sujet.

Simon, P., et al. (2011). "HIT Paris 2011. Systèmes d'information en santé et TIC." Revue Hospitalière De France(539): 64-93, ill., graph.

[BDSP. Notice produite par EHESP mJR0xnFA. Diffusion soumise à autorisation]. Le dossier propose six interventions à l'occasion du congrès HIT 2011 qui a cette année pour thème 'Les systèmes d'information de santé et coopérations' Systèmes d'information et gestion de projet, télémédecine, e-santé, mutualisation et coopération entre établissements dans le déploiement de systèmes d'information sont les thèmes abordés ici.

Snitem (2010). Résultats de questionnaire. Technologies médicales : quels regards des patients et des médecins sur l'innovation, Courbevoie : Snitem

<http://www.annuaire-secu.com/pdf/Rapport-enquete-RPM2-snitem.pdf>

Ce questionnaire a été réalisé par le SNITEM au mois de novembre 2010 auprès d'acteurs de santé renommés : médecins, présidents de sociétés savantes et présidents d'associations de patients, réunis lors des RPM2 du 30 novembre 2010. Ces derniers ont été interrogés sur l'apport des technologies médicales à la prise en charge de maladies qui représentent des enjeux de santé publique importants : maladies cardiovasculaires, diabète, obésité, cancer, maladies neurologiques (en particulier la maladie de Parkinson), insuffisance rénale chronique.

Tarriere, J. (2010). "Tic et Territoires. La télésanté." Gestions Hospitalières(495): 219-221.

[BDSP. Notice produite par EHESP olq8R0xk. Diffusion soumise à autorisation]. Constatant que "malgré l'arrivée à maturité d'un certain nombre de technologies et de services, le développement de la télésanté reste en deçà des besoins et des attentes", le premier ministre a confié, en juin 2009, à Pierre Lasbordes, député et vice-président de l'Office parlementaire d'évaluation des choix scientifiques et technologiques, auteur du rapport sur le Dossier Médical Personnel, une mission pour mettre en place les conditions de déploiements de ce types de services. Cet article présente brièvement les engagements pris par le plan quinquennal 2010-2014 pour développer la télésanté : recommandations, maladies prioritaires, déploiement pluriannuel régional de projets pilotes et type de gouvernance.

Thiebaut, R., et al. (2014). "L'analyse des "Big Data" en recherche clinique." Revue D'épidémiologie Et De Santé Publique **62**(1): 1-4.

[BDSP. Notice produite par ORSRA R0xHnAJJ. Diffusion soumise à autorisation]. Nous sommes entrés dans l'ère des "Big Data", comme en atteste une recherche du mot clé sur Google Trends. Il s'agit de la production massive de données avec un débit toujours plus important : 90% des données mondiales ont été produites au cours des deux dernières années. Les plus gros pourvoyeurs sont connus : accélérateur de particules (Large Hadron Collider [LHC]), le futur télescope (Large Synoptic Survey Telescope [LSST]), Facebook, Youtube, les courriels. En biologie-médecine, les "Big Data" font en premier lieu référence aux données "omiques", en particulier génomiques, avec un débit de production des données de séquençage de plus en plus rapide pour un coût de moins en moins élevé.

Thierry, L. G., et al. (2010). "Place et perspectives de la télémédecine en Guyane." Revue Hospitalière De France(532): 32-34, tabl.

[BDSP. Notice produite par EHESP 9nnn8R0x. Diffusion soumise à autorisation]. Le développement de la télémédecine dans les départements et territoires d'outre-mer fait partie des priorités du plan Santé outre-mer, dont les dispositions sont parues en juillet 2009. La Guyane peut se prévaloir d'une expérience dans ce domaine depuis 2001 : sa distribution géographique particulière, aux nombreux sites isolés, implique une démarche volontariste pour offrir aux populations un meilleur accès aux soins. Tandis que les applications de télécardiologie, télédialyse et téléradiologie fait l'objet d'un projet ambitieux : des robots d'échographie seront bientôt installés sur des sites distants de plus de 450 km du centre hospitalier du Cayenne, permettant de dater une grossesse ou de donner un avis sur l'évacuation sanitaire héliportée.

Tron, -. D., Y.E. (2014). "Big data et médecine hospitalière : un marché en plein boom, un défi pour la camp de l'émancipation." Cahiers De Santé Publique Et De Protection Sociale (Les)(14): 10-11.

Prendre la mesure des enjeux des big data et de la télémédecine dans la médecine hospitalière, c'est dessiner les racines du monde de demain... et le potentiel d'asservissement du service public de santé aux entreprises privées. Cet article fait un point sur les enjeux pour le grand public et la réglementation en vigueur.

Tronquoy, P. (éd.) (2017). "Big data et santé." Cahiers Français(399): 49-55.

Si nombre de domaines sont appelés à connaître des transformations très profondes du fait de l'utilisation des Big Data, celui de la santé apparaît tout particulièrement concerné. Se posent alors notamment les questions du traitement des données relatives aux patients, de leur mutualisation et de leur confidentialité. Les usages qui pourront en être faits sont multiples et concernent aussi bien les rapports entre médecins et malades que l'amélioration de l'efficacité de la recherche ou encore une meilleure organisation du système de santé. Cet article est un extrait du document élaboré à l'occasion de la réflexion lancée, en septembre 2015, par le ministère chargé de la santé sur les apports du Big Data en matière de santé. Les enjeux sociétaux et économiques sont majeurs.

Vallancien, G. (2017). La médecine sans médecin ? Le numérique au service du malade, Paris : Gallimard

L'évolution accélérée des technologies bouleverse la médecine et le système de santé français. Elle porte à ses dernières conséquences le changement que le stéthoscope de Laennec avait jadis engagé en forgeant un instrument qui démultiplie le pouvoir de l'observation. On assiste pour de bon à l'émergence de ce que Guy Vallancien propose d'appeler une « média-médecine », une médecine médiatisée par le recours aux capacités de l'ordinateur, que l'on retrouve de la génétique à la robotique chirurgicale, en passant par la télémédecine et les communautés de malades. C'est à l'analyse des transformations rendues possibles par cet outil d'une puissance incomparable que l'ouvrage est consacré. Leurs effets ne s'arrêtent pas à la seule pratique médicale. Elles permettent d'envisager une réorganisation profonde du système de santé. Contre l'antiscience actuelle, Guy Vallancien se livre à un vigoureux plaidoyer en faveur des progrès technologiques.

Vallin, X., et al. (2014). "Dossier Territoires, systèmes d'information et e-santé." Revue Hospitalière De France(557): 40-55, fig.

[BDSP. Notice produite par EHESP sDG7R0xG. Diffusion soumise à autorisation]. Afin d'assurer une meilleure qualité et sécurité des soins, de nombreux projets dans le domaine des nouvelles technologies de l'information et de la communication se développent actuellement au niveau national ou local. Après avoir abordé de façon générale les enjeux et problématiques de ces projets, notamment pour favoriser l'échange d'information et passer d'un système d'information hospitalier à un système d'information de santé, ce dossier présente plusieurs réalisations en cours : la mise en place d'un dossier patient partagé au sein des communautés hospitalières de territoire Hôpital Nord-Ouest et Centre Manche, le projet IRIS bâti par le CHU de Bordeaux visant l'interconnexion de réseaux d'images entre plusieurs établissements aquitains, le projet MSSanté porté par l'ASIP visant à réunir toutes les messageries sécurisées et leurs utilisateurs au sein d'un même espace de confiance, le terminal multimédia déployé par le centre hospitalier de Calais dans l'objectif d'une meilleure information du patient, le dispositif de vidéo-assistance développé à la Rochelle pour sécuriser la préparation des chimiothérapies.

Vayssette, P. (2013). "GCS e-santé : un appui e-santé dans 23 régions sur 26." Réseaux Santé & Territoire(50): 14-23, graph.

[BDSP. Notice produite par EHESP 7m8kR0xD. Diffusion soumise à autorisation]. Dans presque toutes les régions, des groupements de coopération sanitaire (GCS) en système d'information en santé (SIS) se sont créés et proposent un appui à la mise en œuvre de services numériques de santé à leurs membres. Ces GCS sont adossés aux ARS qui assurent près de la moitié de leur financement. Un exemple présenté ici est le GCS Télésanté Aquitaine, qui assure la maîtrise d'ouvrage en e-santé auprès de différents acteurs de la santé. L'Asip Santé a lancé plusieurs appels à projets ces dernières années pour développer l'e-santé en régions. Quatre axes sont visés : le DMP, la maîtrise d'ouvrage régionale, la télémédecine et les logiciels de bureautique des établissements médico-sociaux.

Venot, A. é. (2013). Information médicale, e-santé. Fondements et applications, Paris : Springer-Verlag France

L'informatique médicale est devenue au fil des années une vraie discipline scientifique dont les bases et applications sont enseignées non seulement dans tous les domaines de santé (médecine, odontologie, pharmacie, maïeutique, sciences sanitaires et sociales, école de soins infirmiers et de kinésithérapie, écoles de santé publique) mais également dans de nombreux autres cursus (Sciences de la vie, Écoles d'ingénieur et d'économie, etc.). Ce livre est le fruit du travail collectif de nombreux auteurs appartenant principalement au Collège français des enseignants chercheurs de cette discipline. Il est composé de 19 chapitres qui comportent tous des objectifs pédagogiques, des conseils pour approfondir les connaissances dans le domaine et des exercices.

Vercaemer, J., et al. (2012). "A la croisée des télécoms et de la santé. M-Health, un marché en pleine éclosion." *Techniques Hospitalières*(732): 55-72.

[BDSP. Notice produite par EHESP 8BR0xkBm. Diffusion soumise à autorisation]. Ce dossier réunit les résumés des interventions de la première édition de "M-Health, le rendez-vous des télécoms et de la santé", qui a proposé en 2011 un tour d'horizon sur l'état de la recherche, les solutions techniques et les projets en cours dans le domaine de la santé mobile. En effet, le marché de la santé mobile est en plein développement. A titre d'exemple, depuis 2008, dix-sept mille applications de "m-santé" ont déjà été créées pour les smartphones. Face au vieillissement de la population, à la forte évolution des maladies chroniques et à l'augmentation du coût des soins, le développement des services de m-santé apporte des réponses concrètes aux attentes des patients et des professionnels.

Vignerot, E., et al. (2003). *Santé et territoires, une nouvelle donne*, La Tour d'Aigues : Editions de l'Aube Paris : Datar

L'actualité politique sur la décentralisation et la " régionalisation expérimentale" a une incidence sur la recomposition territoriale de l'offre de soins. Cette approche territoriale de la santé est abordée sous les aspects suivants : démographie médicale, intercommunalité hospitalière, politique du médicament, démarche qualité, transport sanitaire, réseaux de soins, télémédecine, systèmes d'information, développement de grands pôles régionaux de recherche et valorisation en biotechnologies.

ÉTUDES ÉTRANGÈRES

(2016). "The use and impact of digital technology on population health and health equity gains." *Journal of Public Health Policy* **37**(4): 399-402.

<http://dx.doi.org/10.1057/s41271-016-0050-z>

AISS (2019). Dix défis pour la sécurité sociale en Europe : rapport de l'AISS. Genève AISS: 68.

<https://www.issa.int/fr/resources/all-publications>

L'Europe est confrontée à des transitions technologique, démographique, épidémiologique et du marché du travail complexes qui posent des problèmes pour la conception et le financement des systèmes de sécurité sociale, ainsi que pour la définition de leurs priorités. Intitulé "Dix défis mondiaux pour la sécurité sociale : Europe", le nouveau rapport publié par l'Association internationale de la sécurité sociale (AISS) révèle que les institutions européennes de sécurité sociale classent « les marchés du travail et l'économie numérique » en tête des défis qu'elles ont à relever. Viennent ensuite « le vieillissement de la population », « la transition technologique » et « la santé et les soins de longue durée ». La nature de ces défis jugés prioritaires montre que tous les systèmes de sécurité sociale remplissent leur mission dans un environnement marqué par une incertitude sans précédent, ce qui a parfois imposé de recalibrer les objectifs qui sont au cœur des dispositifs de sécurité sociale. « Afin de relever ces défis mondiaux, la sécurité sociale européenne doit continuer de se mobiliser pour innover, ce qu'elle a les moyens de faire », a déclaré Marcelo Abi-Ramia Caetano, Secrétaire général de l'AISS. Ce rapport sur l'Europe s'inscrit dans le prolongement d'un rapport mondial novateur publié en 2016 par l'AISS. L'un et l'autre reposent sur des enquêtes menées auprès des institutions membres de l'AISS, d'autres institutions publiques de sécurité sociale, de ministères et d'organismes publics

Ashwood, J. S., Mehrotra, A., Cowling, D., et al. (2017). "Direct-To-Consumer Telehealth May Increase Access To Care But Does Not Decrease Spending." *Health Affairs* **36**(3): 485-491.

<http://content.healthaffairs.org/content/36/3/485.abstract>

The use of direct-to-consumer telehealth, in which a patient has access to a physician via telephone or videoconferencing, is growing rapidly. A key attraction of this type of telehealth for health plans and employers is the potential savings involved in replacing physician office and emergency department visits with less expensive virtual visits. However, increased convenience may tap into unmet demand for health care, and new utilization may increase overall health care spending. We used commercial claims data on over 300,000 patients from three years (2011–13) to explore patterns of utilization and spending for acute respiratory illnesses. We estimated that 12 percent of direct-to-consumer telehealth visits replaced visits to other providers, and 88 percent represented new utilization. Net annual spending on acute respiratory illness increased \$45 per telehealth user. Direct-to-consumer telehealth may increase access by making care more convenient for certain patients, but it may also increase utilization and health care spending.

Atkinson, K. M. et al., e. (2017). "Using Mobile Apps to Communicate Vaccination Records: A City-wide Evaluation with A National Immunization App, Maternal Child Registry and Public Health Authorities." *Healthcare Quarterly* **20**(3): 41-46.

Medicine is experiencing a paradigm shift, where patients are increasingly involved in the management of their health data. We created a mobile app which permitted parental reporting of immunization status to public health authorities. We describe app use as a proxy for feasibility and acceptability as well as data utility for public health surveillance. The evaluation period ran from April 27, 2015, to April 18, 2017, during which time 2,653 unique children's records were transmitted, containing 36,105 vaccinations. Our findings suggest that mobile immunization reporting is feasible and may be an acceptable complement to existing reporting methods. Measures of data utility suggest that mobile reporting could enable more accurate assessments of vaccine coverage.

Barbabella, F., et al. (2016). How can eHealth improve care for people with multimorbidity in Europe? Copenhagen OMS Bureau régional de l'Europe: 25 , fig.

<http://www.euro.who.int/en/about-us/partners/observatory/publications/policy-briefs-and-summaries/how-can-ehealth-improve-care-for-people-with-multimorbidity-in-europe?>

eHealth is an area of great untapped potential especially in care for people with multimorbidity. This policy brief identifies: the eHealth solutions available; their potential benefits; and the current policies around the adoption of eHealth in care for people with multimorbidity. It offers policy makers insights on how to exploit eHealth solutions to the challenges of multimorbidity. The key messages include: eHealth has the potential to improve care and offer new services for people with multimorbidity by facilitating better communication and sharing of information and by providing tools for self-management and decision making (personal health records, decision support systems, information systems for risk stratification). Patients, informal carers and care professionals will all need training in digital health literacy with educational campaigns having an important role in improving uptake. Policy makers planning to extend eHealth need to: Fill the gaps in regulation creating a clear legal framework; Address interoperability and compatibility and foster standardization nationally and across countries; Put in place adequate funding frameworks, and commission large-scale studies to evaluate impact.

Black, A. D., et al. (2011). "The Impact of eHealth on the Quality and Safety of Health Care: A Systematic Overview." *Plos Medicine* **8**(1): 16.

<http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000366>

There is considerable international interest in exploiting the potential of digital solutions to enhance the quality and safety of health care. Implementations of transformative eHealth technologies are underway globally, often at very considerable cost. In order to assess the impact of eHealth solutions on the quality and safety of health care, and to inform policy decisions on eHealth deployments, we undertook a systematic review of systematic reviews assessing the effectiveness and consequences of

various eHealth technologies on the quality and safety of care. We systematically reviewed the preexisting systematic review literature on eHealth technologies and their impact on the quality and safety of health care delivery. We synthesised and contextualised our findings with the broader theoretical and methodological literature with a view to producing a comprehensive and accessible overview of the field. We present here a synopsis and updated version of a much larger recently published report covering the period 1997-2010.

Bockerman, P., Kortelainen, M., Laine, L. T., et al. (2019). Digital Waste? Unintended Consequences of Health Information Technology. VATT Working Papers 117/2019. Helsinki Vatt Institute for Economic Research: 70, fig., tabl.

<https://www.doria.fi/handle/10024/168182>

We exploit a large-scale natural experiment - the rollout of a nationwide electronic prescribing system in Finland - to study how digitization of prescriptions affects pharmaceutical use and health outcomes. We use comprehensive administrative data from patients treated with benzodiazepines, which are globally popular, effective but addictive psychotropic medications. We find no impact on benzodiazepine use on average, but among younger patients e-prescribing increases repeat prescription use. Younger patients' health outcomes do not improve but adverse outcomes, such as prescription drug abuse disorders and suicide attempts, increase dramatically. Improving access to medication through easier ordering may thus increase medication overuse.

Bonhomme, C. (2014). "Cinq questions à Gilles Babinet : Digital champion français auprès de la Commission européenne." Revue Hospitalière De France(559): 54-55.

[BDSP. Notice produite par EHESP D8R0xIFr. Diffusion soumise à autorisation]. Gilles Babinet a été nommé "Digital champion" et représente, à ce titre, la France auprès de la Commission européenne pour les enjeux du numérique. Auteur de deux ouvrages, il identifie cinq domaines intrinsèquement liés au numérique : la connaissance, l'éducation, la santé, l'industrialisation/production et l'Etat.

Butler, R. J. et Johnson, W. G. (2016). "Rating the digital help: electronic medical records, software providers, and physicians." International Journal of Health Economics and Management 16(3): 269-283.

<http://dx.doi.org/10.1007/s10754-016-9190-8>

To separate the effects of physicians' characteristics on the perceived productivity of EMRs from the effects of limitations on usability inherent in EMR design, a multivariate regression model is used to estimate the factors influencing physicians' rankings of five attributes of their EMRs, namely; ease of use and reliability; the EMRs effect on physician and staff productivity and the EMRs performance vs. vendor's promises. We divide the factors influencing the rankings into three groups: physician characteristics, EMR characteristics and practice characteristics (type of practice, size, and location). The data are from approximately 1800 practicing physicians in Arizona. Physician's characteristics influence perceived ease of use and physicians' productivity, but not staff productivity, reliability or vendors' promised performance. Practice type and EMR characteristics affect perceived productivity, reliability and performance versus vendors' promises. Vendor-specific effects are highly correlated across all five attributes and are always jointly significant. EMR characteristics are the most significant influence on physicians' perceptions of the EMRs effect on their productivity and that of their staff. Physicians' characteristics (particularly age) have a small but significant influence on perceived productivity.

Commission Européenne (2018). Market study on telemedicine. Bruxelles Commission européenne: 130, tab., graph., fig.

https://ec.europa.eu/health/sites/health/files/ehealth/docs/2018_provision_marketstudy_telemedicine_en.pdf

Commandée par l'Union européenne, cette étude examine le marché européen de la télémédecine et les facteurs qui en déterminent son développement. L'analyse présente les applications de télémédecine et les directives techniques, et décrit la dynamique du marché et les obstacles potentiels limitant un déploiement et une adoption plus larges. Une évaluation de la rentabilité d'un

déploiement à grande échelle dans les conditions actuelles et futures du marché est entreprise afin de fournir aux décideurs des conseils judicieux.

Commission Européenne (2007). eHealth priorities and strategies in European countries. eHEALTH ERA REPORT. Luxembourg Office des Publications officielles des Communautés européennes: 96.
http://ec.europa.eu/information_society/activities/health/docs/policy/1-2007ehealth-era-countries01-16.pdf

This report presents fact sheets of all European countries for which validated information about their eHealth strategies and implementation was available by the end of January 2007. Les pays concernés sont les suivants : Autriche, Finlande, Roumanie, France, Royaume-Uni et Slovaquie.

Commission Européenne (2011). eHealth Benchmarking III. Bruxelles Communauté européenne: 274.

The study provides the result of a survey on Benchmarking deployment of eHealth services in acute hospitals in 30 European countries. Chief Information Officers were asked about the availability of eHealth infrastructure and applications in their hospitals whereas Medical Directors were asked about priority areas for investment, impacts and perceived barriers to the further deployment of eHealth. Applying state of the art multivariate statistical analysis to the data of survey of eHealth deployment in Acute European Hospitals funded by DG INFSO, JRC-IPTS researchers have constructed a composite indicator of take up and usage of eHealth in European hospitals, as well as a typology of impacts.

Cnam (2002). Rapport sur l'e-santé en Allemagne, en Belgique, au Danemark, aux Etats-Unis, en Finlande, en Grande-Bretagne, en Irlande, en Italie, en Norvège, aux Pays-Bas, en Suède et en Suisse. Le Mans : Mission Recherche Internationale. : 229.

Le présent rapport résulte d'une demande de la direction générale de la Cnamts, en date de février 2001. L'objet de cette demande est l'e-santé et concerne les pays couverts par la Mission Recherche Internationale (MRI). Cette étude comparative a pour but d'apprécier l'utilisation d'internet par les professionnels de santé et le public, de connaître leurs attentes vis à vis de ce nouvel outil de communication, d'en retirer les éléments les plus intéressants et des recommandations adaptées à la situation française.

De Pietro, C. et Francetic, I. (2017). "E-health in Switzerland: The laborious adoption of the federal law on electronic health records (EHR) and health information exchange (HIE) networks." Health Policy : Ahead of print.

Within the framework of a broader e-health strategy launched a decade ago, in 2015 Switzerland passed a new federal law on patients' electronic health records (EHR). The reform requires hospitals to adopt interoperable EHRs to facilitate data sharing and cooperation among healthcare providers, ultimately contributing to improvements in quality of care and efficiency in the health system. Adoption is voluntary for ambulatories and private practices, that may however be pushed towards EHRs by patients. The latter have complete discretion in the choice of the health information to share. Moreover, careful attention is given to data security issues. Despite good intentions, the high institutional and organisational fragmentation of the Swiss healthcare system, as well as the lack of full agreement with stakeholders on some critical points of the reform, slowed the process of adoption of the law. In particular, pilot projects made clear that the participation of ambulatories is doomed to be low unless appropriate incentives are put in place. Moreover, most stakeholders point at the strategy proposed to finance technical implementation and management of EHRs as a major drawback. After two years of intense preparatory work, the law entered into force in April 2017.

Footman, K., et al. (2014). Cross-border health care in Europe. Copenhagen OMS Bureau régional de l'Europe: 39 , tabl., graph., fig.
http://www.euro.who.int/_data/assets/pdf_file/0009/263538/Cross-border-health-care-in-Europe-Eng.pdf

This new policy summary explores how European health systems are responding to increasing patient and professional mobility across the European Union. Recent legislative changes which clarify patient entitlements to cross-border care are likely to have important impacts on national and EU-wide

policies. However, measures to optimise implementation of clinical guidelines, discharge summaries, use of technologies and regulation of professional standards are all likely to be beneficial for patients receiving care in their home country as well as for those who travel abroad.

Freemann, P. et Robins, A. (2016). "The use and impact of digital technology on population health and health equity gains." *Journal of Public Health Policy* **37**(4): 399-402.

Garel, P. (2010). "Santé en ligne : nouvelles étapes européennes." *Revue Hospitalière De France*(532): 35-36.

[BDSP. Notice produite par EHESP 8ER0xBF7. Diffusion soumise à autorisation]. Les antécédents médicaux d'un ressortissant de l'Union européenne voyageant ou résidant hors de son pays seront-ils bientôt accessibles en ligne ? Le 1er décembre 2009, le Conseil des ministres de l'Emploi, des Affaires sociales et de la Santé des États membres de l'UE adoptait des "conclusions sur la contribution de la santé en ligne à la sécurité et à l'efficacité des soins de santé". La santé en ligne, ou e-santé, recouvre l'ensemble des technologies et services pour les soins médicaux basés sur les technologies de l'information et de la communication. Constatant ses avantages en termes de sécurité et d'efficacité, les représentants des États membres de l'UE préconisaient en février 2009 la mise en œuvre de mesures destinées à créer un espace européen de santé en ligne et à instaurer un processus d'actions coordonnées et de gouvernance de l'e-santé.

Garel, P. (2011). "E-santé. État des lieux européen." *Revue Hospitalière De France*(539): 78-80.

[BDSP. Notice produite par EHESP rEp9R0xn. Diffusion soumise à autorisation]. Avec l'article 13 de la directive sur les soins transfrontaliers, l'e-santé est devenue un sujet législatif au sein de l'Union européenne. La coopération et l'échange d'informations entre les États membres, réunis dans un réseau d'administrations nationales responsables de l'e-santé, seront désormais soutenus par l'UE sur un fondement juridique. L'article présente les programmes de recherche européens développés pour la mise en place des outils et systèmes d'e-santé.

Giordano, R., et al. (2011). Perspectives on telehealth and telecare. Learning from the 12 Whole System Demonstrator Action Network (WSDAN) sites. Londres King's Fund Institute: 43 , tabl.

http://www.kingsfund.org.uk/publications/articles/th_perspectives.html

This briefing paper, assembled by The Kings Fund for the British Ministry of Health, looks at Britain's Whole System Demonstrator Action Network (WSDAN), an online telecare and telehealth action research program. The paper examines the experiences of the WSDAN network's 12 sites in implementing telehealth and telecare.

Gowrisankaran, G., et al. (2016). Does Health IT Adoption Lead to Better Information or Worse Incentives? *NBER Working Paper Series ; n° 22873*. Cambridge NBER: 54 , fig.

www.nber.org/papers/w22873

We evaluate whether hospital adoption of electronic medical records (EMRs) leads to increases in billing where financial gains are large or where hassle costs of complete coding are low. The 2007 Medicare payment reform varied both financial incentives and hassle costs of coding. We find no significant impact of financial incentives on billing levels, inconsistent with bill inflation. However, the reform led to increases in reported severity for medical relative to surgical patients at EMR hospitals, consistent with EMRs decreasing coding costs for medical patients. Greater post-reform completeness of coding with EMRs may increase Medicare costs by \$689.6 million annually.

Inforoute Santé Canada (2018). Étude d'évaluation des avantages de l'information de santé connectée au Canada. Montréal Inforoute Santé du Canada: 26 ,tabl.

www.inforoute.ca/fr/component/edocman/3514-etude-d-evaluation-des-avantages-de-l-information-de-sante-connectee-au-canada

Cette étude a été commandée par Inforoute santé, un organisme à but non lucratif financé par le gouvernement du Canada et visant à accélérer la création, l'adoption et l'utilisation d'outils de santé

numériques. Inforoute surveille notamment les progrès de chaque province et territoire en ce qui concerne l'accessibilité des données pour chacune des six composantes de base du Dossier de Santé Electronique interopérable (données démographiques des clients et des professionnels de la santé, imagerie diagnostique des hôpitaux, profils des médicaments prescrits; résultats d'analyses de laboratoire; et rapports cliniques et de vaccination). L'étude d'évaluation des avantages de l'information de santé connectée au Canada met en évidence les gains réalisés à mesure qu'augmente l'utilisation de l'information en santé connectée par les professionnels.

INGBelgique (2019). Health ProspectING 2019. Comment favoriser l'intégration des soins ? Bruxelles ING Belgique: 88 , fig.

Cette édition 2019 de Health ProspectING est articulée autour des thèmes centraux de l'intégration et de la continuité des soins entre les hôpitaux et leurs partenaires du système des soins de santé. Ces thèmes, qui figurent au cœur de la réforme du secteur hospitalier tant en Europe qu'en Belgique, sont une condition essentielle à la prise en charge pertinente du patient. L'étude évoque les pistes de réflexion actuelles, examine les solutions mises en place dans un certain nombre de pays et expose celles qui peuvent être une source d'inspiration pour la Belgique.

Liobikienė, G. et Bernatoniene, J. (2018). "The determinants of access to information on the Internet and knowledge of health related topics in European countries." *Health Policy* **122**(12): 1348-1355.

The aim of this study is to analyze the determinants of access to health-related information on the Internet and their influence on perceived knowledge of health-related topics in European countries. Referring to the European citizens' digital health literacy survey and applying structural equation modelling hypotheses, the obtained results showed that assumption of acceptance of information and capacity level are the main determinants which have the biggest influence on the perception of access to health-related information on the Internet. The access to health-related information negatively determined the perceived level of knowledge about health-related topics, which reveals that people making more use of the information are more critical in assessing the level of their knowledge. People who evaluated their health status as poor stated that they knew about health-related topics less. Therefore, the high level of access to health-related information does not mean that people would assume having more knowledge about health-related topics. The establishment of a platform on the Internet, which would supply all understandable information on health-related topics, would be the main tool for enhancing the level of knowledge of health-related topics.

Martenstein, I. et Wienke, A. (2016). "[Current legislation in the healthcare system 2015/2016]." *Anaesthetist* **65**(5): 391-396.

The energy of the legislator in the healthcare system was barely stoppable in 2015. Many new laws have been brought into force and legal initiatives have also been implemented. The Hospital Structure Act, the Treatment Enhancement Act, amendments of the official medical fee schedules for physicians, the Prevention Act, the E-Health Act, the Anti-corruption Act, the hospital admission guidelines and amendments of the model specialty training regulations are just some of the essential alterations that lie ahead of the medical community. This article gives a review of the most important new legislative regulations in the healthcare system and presents the fundamental consequences for the practice.

Martin, R., et al. (2005). Outpatient services and primary care : a scoping review of research into strategies for improving outpatient effectiveness and efficiency. Manchester NPCRDC: 169 , tabl.

<https://www.ncbi.nlm.nih.gov/books/NBK361211/>

A key government objective in NHS reform is to reduce waiting times for specialist care. Broadly speaking there are two strategic approaches to achieving this objective. The first is to increase hospital capacity and so achieve faster throughput of patients. The second is to reduce demand for specialist care by finding alternatives to outpatient treatment. This review is focused on the latter of these two strategies.

McConnochie, K. M. (2015). "Pursuit of Value in Connected Healthcare." *Telemed J E Health* **21**(11): 863-869.

INTRODUCTION: Potential for direct patient care through remote exchange of health-related information has expanded enormously with the proliferation of technologies leveraging ubiquitous connectivity, but implementation of connected care has been slow and controversial. **MATERIALS AND METHODS:** This review demonstrates that controversy regarding connected care arises largely from the fact that proponents and critics are generally considering distinctly different care models. Differences are highlighted to mitigate controversy and to distinguish capacities of these different models. **RESULTS:** Distinguishing capacities is essential for establishing the evidence base supporting safety, effectiveness, and efficiency. In care of a particular patient's problem, value is achieved when resources allocated meet requirements for diagnosis and intervention but do not exceed them. Robust evidence supports the value of some well-defined connected care models, exemplified by the Health-e-Access Telemedicine Model. **CONCLUSIONS:** The pursuit of value in connected care is fundamentally the same as with in-person care. Provider organizations, legislators, regulators, and payers face not only a complex task in defining standards and enabling appropriate use, but also a heavy burden of responsibility for unleashing connected care that will benefit the entire community.

Melchiorre, M. G., Papa, R., Rijken, M., et al. (2017). "eHealth in integrated care programs for people with multimorbidity in Europe: insights from the ICARE4EU project." *Health Policy*(Ahead of print).
<http://dx.doi.org/10.1016/j.healthpol.2017.08.006>

eHealth applications for multimorbidity are not widely implemented In Europe.?In most cases Electronic Health Records (EHRs) are adopted. Adequate funding mechanisms, interoperability and technical support seem to be lacking.?eHealth could support integrated care for people with multimorbidity. eHealth could help older people with multimorbidity living in the community.

Ministry of Health and Social Affairs (2016). Vision for eHealth 2025 : Common starting points for digitisation of social services and health care. Stockholm Ministry of Health and Social Affairs: 16 , tab., graph., fig.
<http://www.government.se/contentassets/b0fd09051c6c4af59c8e33a3e71fff24/vision-for-ehealth-2025.pdf>

La Suède veut devenir un chef de file mondial en matière de santé numérique. Les gouvernements nationaux, régionaux et locaux ont adopté une stratégie de cybersanté pour faire du pays un leader mondial dans la numérisation des soins de santé et des services sociaux d'ici 2025. La vision intégrée fera la promotion de services numériques accessibles et équitables qui priorisent la qualité, l'efficacité et la vie privée.

Morgan, D., et al. (2009). Obtenir un meilleur rapport qualité-prix dans les soins de santé. Paris OCDE: 182 , ann., graph., tabl.
<http://browse.oecdbookshop.org/oecd/pdfs/browseit/8109172E.PDF>

La hausse des dépenses publiques de santé reste un problème dans pratiquement tous les pays de l'OCDE et de l'Union européenne. C'est pourquoi l'attention se porte de plus en plus sur les mesures qui atténueront ces pressions en améliorant la performance des systèmes de santé. Ce rapport présente un ensemble de politiques pouvant aider les pays à améliorer l'efficacité des systèmes de santé et ainsi à obtenir un meilleur rapport qualité-prix dans les soins. Un large éventail d'instruments d'action est examiné en tirant parti de données et d'études de cas portant sur de nombreux pays. Les thèmes suivants sont traités : le rôle de la concurrence sur les marchés de la santé ; les possibilités d'amélioration de la coordination des soins ; une tarification plus adaptée des produits pharmaceutiques ; un contrôle plus poussé de la qualité s'appuyant sur une utilisation plus intensive des technologies de l'information et de la communication pour les soins ; et un plus large partage des coûts.

OCDE (2010). Achieving Efficiency Improvements in the Health sector through ICTs - Final report. Paris OCDE: 117 , tabl., fig.

This report presents an analysis of OECD countries efforts to implement information and communication technologies (ICTs) in health care systems. It provides advice on the range of policy options, conditions and practices that policy makers can adapt to their own national circumstances to

accelerate adoption and effective use of these technologies. The analysis draws upon a considerable body of recent literature and in, particular, lessons learned from case studies in six OECD countries (Australia, Canada, the Netherlands, Spain, Sweden, and the United States), all of which reported varying degrees of success deploying health ICT solutions.

OCDE (2013). *ICTs and the Health Sector. Towards Smarter Health and Wellness Models*. Paris OCDE: 177, fig. http://www.oecd-ilibrary.org/fr/science-and-technology/icts-and-the-health-sector_9789264202863-en

This report examines the challenges facing health care systems and the strategic directions for a smarter health and wellness future, from both technological and policy viewpoints. It looks at the role of information and communication technologies (ICTs) and discusses the research and policy options that could further the development of smarter health and wellness systems.

OMS (2016). *The Atlas of eHealth Country Profiles*, Genève : OMS
http://www.who.int/goe/publications/atlas_2015/en/

The third global survey on eHealth conducted by the WHO Global Observatory for eHealth (GOe) has a special focus – the use of eHealth in support of universal health coverage. eHealth plays a vital role in promoting universal health coverage in a variety of ways. For instance, it helps provide services to remote populations and underserved communities through telehealth or mHealth. It facilitates the training of the health workforce through the use of eLearning, and makes education more widely accessible especially for those who are isolated. It enhances diagnosis and treatment by providing accurate and timely patient information through electronic health records. And through the strategic use of ICT, it improves the operations and financial efficiency of health care systems. This Atlas presents data collected on 125 WHO Member States. The survey was undertaken between April and August 2015 and represents the most current information on the use of eHealth in these countries. The Atlas will be a useful and unique reference tool for policy makers, eHealth planners and professionals.

OMS (2011). *MHealth: New horizons for health through mobile technologies*, Genève : OMS
http://www.who.int/goe/publications/goe_mhealth_web.pdf

The use of mobile and wireless technologies to support the achievement of health objectives (mHealth) has the potential to transform the face of health service delivery across the globe. A powerful combination of factors is driving this change. These include rapid advances in mobile technologies and applications, a rise in new opportunities for the integration of mobile health into existing eHealth services, and the continued growth in coverage of mobile cellular networks. According to the International Telecommunication Union (ITU), there are now over 5 billion wireless subscribers; over 70% of them reside in low- and middle income countries. The GSM Association reports commercial wireless signals cover over 85% of the world's population, extending far beyond the reach of the electrical grid. For the first time the World Health Organization's (WHO) Global Observatory for eHealth (GOe) has sought to determine the status of mHealth in Member States; its 2009 global survey contained a section specifically devoted to mHealth. Completed by 114 Member States, the survey documented for analysis four aspects of mHealth: adoption of initiatives, - types of initiatives, status of evaluation, and - barriers to implementation. Fourteen categories of mHealth services were surveyed: health call centres, emergency toll-free telephone services, managing emergencies and disasters, mobile telemedicine, appointment reminders, community mobilization and health promotion, treatment compliance, mobile patient records, information access, patient monitoring, health surveys and data collection, surveillance, health awareness raising, and decision support systems.

OCDE (2019). *Going digital: Shaping policies, improving lives*. Paris OCDE: 262.
<https://www.oecd.org/publications/going-digital-shaping-policies-improving-lives-9789264312012-en.htm>

Digital technologies and data are transformational. People, firms and governments live, interact, work and produce differently than in the past, and these changes are accelerating rapidly. How can we realise the immense promises of digital technologies and data for growth and well-being in a fast evolving world? This report charts the road ahead. It identifies seven policy dimensions that allow

governments – together with citizens, firms and stakeholders – to shape digital transformation to improve lives. It also highlights key opportunities, challenges and policies related to each dimension, offers new insights, evidence and analysis, and provides recommendations for better policies in the digital age.

OCDE (2019). *Measuring the digital transformation : a roadmap for the future*. Paris OCDE: 262.

<http://www.oecd.org/fr/industrie/measuring-the-digital-transformation-9789264311992-en.htm>

This report provides new insights into the state of the digital transformation by mapping indicators across a range of areas – from education and innovation, to trade and economic and social outcomes – against current digital policy issues, as presented in *Going Digital: Shaping Policies, Improving Lives*. In so doing, it identifies gaps in the current measurement framework, assesses progress made towards filling these gaps and sets-out a forward-looking measurement roadmap. The goal is to expand the evidence base, as a means to lay the ground for more robust policies for growth and well-being in the digital era.

OMS (2016). *From innovation to implementation – eHealth in the WHO European Region*, Copenhague : OMS Bureau régional de l'Europe

<http://www.euro.who.int/fr/publications/abstracts/from-innovation-to-implementation-ehealth-in-the-who-european-region-2016>

Ce rapport décrit le développement de la santé électronique (cybersanté) dans la Région européenne de l'OMS en 2016, ainsi que les nouvelles tendances à cet égard. Son contenu et ses messages clés se basent sur les données de l'enquête mondiale sur la cybersanté réalisée en 2015. Plusieurs acteurs importants dans ce domaine ont également contribué au projet. Le rapport présente des exemples de cas afin d'illustrer les réussites rencontrées dans les pays ainsi que l'application pratique de la cybersanté dans divers contextes. Les principales conclusions indiquent un enthousiasme accru pour la cybersanté, et font état de progrès tangibles dans l'intégration des solutions technologiques en vue d'améliorer la santé publique et la prestation des services de santé dans la Région européenne. Ensemble, les conclusions et l'analyse présentées dans ce rapport donnent un aperçu détaillé de l'évolution de la cybersanté en Europe. Grâce aux recommandations et aux mesures proposées, l'OMS témoigne de son engagement à soutenir les États membres dans leurs efforts visant à instaurer un environnement national de la cybersanté comme élément stratégique dans la réalisation de la couverture universelle en santé, et des objectifs politiques de Santé 2020 dans la Région européenne (résumé de l'éditeur).

OMS (2018). *WHO Guideline: recommendations on digital interventions for health system strengthening*. Genève OMS: xii+124 , tabl.

<https://www.who.int/reproductivehealth/publications/digital-interventions-health-system-strengthening/en/#>

The key aim of this guideline is to present recommendations based on a critical evaluation of the evidence on emerging digital health interventions that are contributing to health system improvements, based on an assessment of the benefits, harms, acceptability, feasibility, resource use and equity considerations. This guideline urges readers to recognize that digital health interventions are not a substitute for functioning health systems, and that there are significant limitations to what digital health is able to address.

Øvretveit, J. (2017). "Digital Technologies Supporting Person-Centered Integrated Care – A Perspective." *Journal of Integrated Care* **17**(4): 1-4.

This report entitled "Mapping and Understanding Exclusion- Institutional, coercive and community based services and practices across Europe" is a new and expanded edition of Mental Health Europe's 2012 Mapping Exclusion report. The report was put together by the University of Kent and Mental Health Europe (MHE), with the help of MHE members and partner organisations, and with support from the Open Society Mental Health Initiative and the European Union's Rights Equality and Citizenship Programme. The report aims to capture updated and more comprehensive information on European countries' mental health laws, the use of

involuntary or forced placements and treatments, the practice of seclusion and restraint, as well as emerging issues in the mental health field in Europe. In mapping mental health systems across Europe, the report also sheds light on the situation of human rights for people who use mental health services and people with psychosocial disabilities. This time around there is a special focus on the stories of people who have experienced institutionalisation and coercion in mental health services which we hope will contribute to a more profound understanding of the exclusion these individuals face in society.

Palm, W., et al. (2014). "Electing health : the Europe we want." *Eurohealth* 20(3): 60 , tab., graph., fig.

This issue's Eurohealth addresses many topics covered in the European Health Forum Gastein. Interviews with health leaders from World Health Organization, the European Union and other important institutions are included. The Observer section covers: Health and European integration; Building EU health policy for the future; Telemedicine; Taking change seriously; and the EU's contribution to health system performance. The International Section contains an article on: From Millennium Development Goals to the post-2015 agenda; Leadership in public health; Development of an R&D Roadmap; Caring for people with multiple chronic conditions; and Personalised medicines. The Systems and Policies section looks at: care coordination and patient choice (Austria); health system trends (FSU countries); and quality of inpatient care (Germany).

Paris, V., et al. (2017). *New Health Technologies : Managing Access, Value and Sustainability*. Paris OCDE: <https://www.oecd.org/publications/managing-new-technologies-in-health-care-9789264266438-en.htm>

This report discusses the need for an integrated and cyclical approach to managing health technology in order to mitigate clinical and financial risks, and ensure acceptable value for money. The analysis considers how health systems and policy makers should adapt in terms of development, assessment and uptake of health technologies. The first chapter provides an examination of adoption and impact of medical technology in the past and how health systems are preparing for continuation of such trends in the future. Subsequent chapters examine the need to balance innovation, value, and access for pharmaceuticals and medical devices, respectively, followed by a consideration of their combined promise in the area of precision medicine. The final chapter examines how health systems can make better use of health data and digital technologies. The report focuses on opportunities linked to new and emerging technologies as well as current challenges faced by policy makers, and suggests a new governance framework to address these challenges.

Pikhart, H. et Pikhartova, J. (2015). Promoting better integration of health information systems: best practices and challenges, Copenhague : OMS Bureau régional de l'Europe <http://www.euro.who.int/fr/publications/abstracts/promoting-better-integration-of-health-information-systems-best-practices-and-challenges>

Ce rapport aborde les tendances actuellement observées dans les États membres de l'Union européenne (UE) et de l'Association européenne de libre-échange (AELE) quant à la manière de promouvoir une meilleure intégration des systèmes d'information sanitaire. Afin d'en sonder les aspects pragmatiques, des experts de 13 États membres de l'UE ont été soumis à un entretien, dont les résultats ont été combinés aux conclusions d'une recherche documentaire. Le rapport de synthèse identifie les options stratégiques et les besoins suivants pour un examen plus approfondi, à savoir : continuer le travail sur certaines notions de base (tels que la disponibilité et la qualité des données, les inventaires de données et les registres, la normalisation, la législation, les infrastructures physiques et les capacités de la main-d'œuvre) et sur des ensembles d'indicateurs davantage axés sur des concepts ; définir la notion de meilleure intégration et en démontrer les avantages concrets ; développer le leadership en matière de renforcement des capacités en vue de poursuivre l'intégration des systèmes d'information sanitaire ; poursuivre les échanges internationaux concernant les activités en cours dans ce domaine.(résumé de l'éditeur).

Pulmanis, E. (2016). Implementation of the eHealth Project in Latvia: Project audit perspective. *MPRA Paper* : 74629. München Université de München: 35. https://mpra.ub.uni-muenchen.de/74629/1/MPRA_paper_74629.pdf

In order to improve effectiveness of provision of healthcare service, the project implemented by the Ministry of Health- "E-health in Latvia" is a step towards the right direction. It will provide the possibility for patients to ensure a greater control over their health issues, by maintaining healthy habits, lifestyle, increase substantiation of adoption of decisions and speed of service in the healthcare industry, ensuring quality and accessible information; patients will receive more quality services and in a shorter period of time for issuance of prescription drugs. Nevertheless, the policy prepared by the Ministry of Health in the area of e-Health will not be implemented in the planned scope and the planned term; therefore the target-to improve the effectiveness of the provision of healthcare services will only be partially achieved. The project „e-Health in Latvia" is necessary and important for the society, but already from the very beginning there have been substantial deficiencies (errors) - the professionals of industry are not involved in the project, multiple changes of institutions implementing the project, ineffective project management and finally, there has not been sufficient supervision of the project. This Paper analyzes the implementation of the e-Health Project in Latvia from the audit perspective, showing the results from the performance-compliance audit carried out by the supreme audit institution – State Audit Office of the Republic of Latvia.

Sabes-Figuera, R. et Abadie, F. (éd.) (2013). European Hospital Survey: Benchmarking deployment of e-Health services (2012–2013) – Country reports. Luxembourg Publications Office of the European Union: 240 , tabl., fig. <http://ftp.jrc.es/EURdoc/JRC85927.pdf>

A widespread uptake of eHealth technologies is likely to benefit European Healthcare systems both in terms of quality of care and financial sustainability and European society at large. This is why eHealth has been on the European Commission policy agenda for more than a decade. The objectives of the latest eHealth action plan developed in 2012 are in line with those of the Europe 2020 Strategy and the Digital Agenda for Europe. This report, based on the analysis of the data from the "European Hospital Survey: Benchmarking deployment of e-Health services (2012–2013)" project, presents policy relevant results and findings for each of the 28 EU Member States as well as Iceland and Norway. The results highlighted here are based on the analysis of the survey descriptive results as well as two composite indicators on eHealth deployment and eHealth availability and use that were developed based on the survey's data.

Sabes-Figuera, R. et Maghiros, I. (2013). European Hospital Survey: Benchmarking Deployment of e-Health Services (2012–2013) - Composite Indicators on eHealth Deployment and on Availability and Use of eHealth Functionalities. Luxembourg Publications Office of the European Union: 39, tabl., fig. <http://ftp.jrc.es/EURdoc/JRC85845.pdf>

The objective of this document is to present results of a benchmarking exercise on the level of eHealth adoption and use in acute hospitals in all 27 EU Member States and Croatia, Iceland and Norway (EU27+3). This exercise is based on data from two surveys carried out in 2010 (Deloitte/Ipsos 2011) and 2012 (PWC 2013) that gathered data on eHealth indicators in acute hospitals. These indicators have been compiled into two different composite indicators on: 1) eHealth deployment and 2) eHealth Availability and Use. The composite indicators are calculated at Hospital level before obtaining average country values, allowing the analysis to build rankings of countries for both composite indicators. Given that the mentioned two surveys gathered comparable information in relation to eHealth deployment, it was possible to compute the related composite indicator for both years and therefore explore its evolution over this 2 year period. However, the questions that gathered information on availability and use of eHealth specific functionalities were introduced in the 2012 survey questionnaire which is why no comparison can be made with the 2010 survey. The structure of the report is as follows. The next section presents the data and methods used. The results section then reports and discusses the main findings. Finally, main conclusions are discussed in the last section

Salcher, M. et al. (2017). "Harnessing Big Data for Health." *Eurohealth* 23(1): 59 , tabl., fig. <http://www.euro.who.int/en/about-us/partners/observatory/publications/eurohealth/full-list-of-past-issues/harnessing-big-data-for-health>

This Spring issue, the Eurohealth Observer section opens with an article that gives a panoramic view of the benefits of unlocking the potential of big data in health care – for patients, providers, policy-makers and researchers. Two articles are presented: Connecting the dots - putting big data to work for health systems; and Big data for better outcomes - supporting health care system transformation in Europe. The International Section contains an article which discusses the health priorities of the 2017 Maltese EU Presidency. The Systems and Policies section looks at four topics, followed by Eurohealth Monitor: Reforms to inpatient care in Slovakia; American health law changes under the Trump Presidency; Health care reform in Kosovo; and Brexit and health in the UK.

Snitem (2016). Etude NOEMIE. Nouveaux modèles économiques de e-santé en Europe. Courbevoie Snitem: 58 , tabl., fig.

http://www.syntec-numerique.fr/sites/default/files/related_docs/2016_01_06_noemie_livrable_avec_reco_060115_vf1.pdf

Ce rapport présente une étude sur les modèles économiques de e-santé en Europe et sur leur "transposabilité" pour trouver en France un modèle financier pérenne. Elle repose sur une analyse empirique de quatre projets mis en place en Angleterre, en Allemagne, en Italie et en Espagne, pays choisis pour leurs systèmes proches du système de santé français car reposant sur un modèle de prise en charge publique et universelle.

Stiftung, B. (2008). "Focus on continuity in care, evaluation techniques, IT for health." Health Policy Developments(6): 111 , tabl., graph., fig.

This issue discusses and examines the following subjects : Evaluation in health care ; continuity of care : concepts of integrated care, disease management and strategies ; information and communication technologies ; human resources in health....

Thromber, A. (2019). The impact of telehealth and telepharmacy technology on public health service pressure and patient outcomes. Londres NowHealthcare Group: 18.

<https://www.nowhealthcaregroup.com/white-paper/>

This report aims to quantify the impact of digital technology on patient outcomes, medicine adherence and the reduction of pressure on public health services and private employers. The figures within are based on live Now Healthcare data combined with publicly available NHS and academic sources.

Van Der Maaden, T., Bruijn, B. J. d., Vonk, R., et al. (2018). Horizon scan of medical technologies. Technologies with an expected impact on the organisation and expenditure of healthcare. Bilthoven RIVM: 81 , tabl., fig., ann.

Medical technology is developing rapidly. Promising new technologies could offer benefits for the quality and organisation of healthcare. However, in practice innovations do not always fully match with medical and societal needs. Healthcare professionals, patients, health insurers, industry and the authorities all agree it is important to improve this. To achieve this, it is important that relevant stakeholders start to join forces already in early stages of development. This is a message from a 'horizon scan' of medical technologies performed by the RIVM at the request of the Dutch Ministry of Health, Welfare and Sports. The 'horizon scan' identifies technologies with a potentially major impact on the society. eHealth, robotics to support care for the elderly, and the 3D printing of for example implants or of organ models to be used for the preparation of surgery, may offer major potential benefits. These technologies are expected to affect the organisation and costs of care, either in a positive or negative sense. The precise impact of these technologies is difficult to predict. Other technologies may also have major impact. Nanotechnology, for example, is considered a technology that enables other innovative developments, such as early diagnosis and treatment of cancer; personalised medicine (customized care) as a development that is enabled by promising medical technologies. In addition, non-medical technologies such as 'big data' and artificial intelligence can have major impact on healthcare. Bringing together stakeholders is the first, important, step to better

connect technological possibilities with medical and societal needs. This may provide direction to developers of technology. It can also help healthcare organisations to take full advantage of promising medical technology.

Volker, D., et al. (2013). "Blended E-health module on return to work embedded in collaborative occupational health care for common mental disorders: Design of a cluster randomized controlled trial." Neuropsychiatric Disease and Treatment 9: 529-537, tabl., fig.

<https://www.dovepress.com/getfile.php?fileID=15873>

Background: Common mental disorders (CMD) have a major impact on both society and individual workers, so return to work (RTW) is an important issue. In The Netherlands, the occupational physician plays a central role in the guidance of sick-listed workers with respect to RTW. Evidence-based guidelines are available, but seem not to be effective in improving RTW in people with CMD. An intervention supporting the occupational physician in guidance of sicklisted workers combined with specific guidance regarding RTW is needed. A blended E-health module embedded in collaborative occupational health care is now available, and comprises a decision aid supporting the occupational physician and an E-health module, Return@Work, to support sick-listed workers in the RTW process. The cost-effectiveness of this intervention will be evaluated in this study and compared with that of care as usual. Methods: This study is a two-armed cluster randomized controlled trial, with randomization done at the level of occupational physicians. Two hundred workers with CMD on sickness absence for 4?26 weeks will be included in the study. Workers whose occupational physician is allocated to the intervention group will receive the collaborative occupational health care intervention. Occupational physicians allocated to the care as usual group will give conventional sickness guidance. Follow-up assessments will be done at 3, 6, 9, and 12 months after baseline. The primary outcome is duration until RTW. The secondary outcome is severity of symptoms of CMD. An economic evaluation will be performed as part of this trial. Conclusion: It is hypothesized that collaborative occupational health care intervention will be more (cost)-effective than care as usual. This intervention is innovative in its combination of a decision aid by email sent to the occupational physician and an E-health module aimed at RTW for the sick-listed worker.

Wake, D. J., et al. (2016). "MyDiabetesMyWay: An Evolving National Data Driven Diabetes Self-Management Platform." J Diabetes Sci Technol.

MyDiabetesMyWay (MDMW) is an award-winning national electronic personal health record and self-management platform for diabetes patients in Scotland. This platform links multiple national institutional and patient-recorded data sources to provide a unique resource for patient care and self-management. This review considers the current evidence for online interventions in diabetes and discusses these in the context of current and ongoing developments for MDMW. Evaluation of MDMW through patient reported outcomes demonstrates a positive impact on self-management. User feedback has highlighted barriers to uptake and has guided platform evolution from an education resource website to an electronic personal health record now encompassing remote monitoring, communication tools and personalized education links. Challenges in delivering digital interventions for long-term conditions include integration of data between institutional and personal recorded sources to perform big data analytics and facilitating technology use in those with disabilities, low digital literacy, low socioeconomic status and in minority groups. The potential for technology supported health improvement is great, but awareness and adoption by health workers and patients remains a significant barrier.

Welfens, P. J. L. (2016). E-Health: Grundlagen der Digitalen Gesundheitswirtschaft und Leitmarktperspektiven. EIIW Discussion Papers ; 227. Wuppertal University of Wuppertal: 48 , tab., graph., fig.

http://eiiw.eu/fileadmin/eiiw/Daten/Publicationen/Gelbe_Reihe/disbei227.pdf

The expansion of the digital health economy represents a strategic challenge for both the wider economy and society of the Federal Republic of Germany. In this context, economic policy actors need to set adequate framework conditions, such that competition in the health system, i.e. the interaction of statutory and private health insurance providers, will lead to optimal innovation dynamics and efficiency gains. Statutory and private health insurance funds each follow their own strategies.

Amongst other strategies, private insurance providers make use of the possibility that firms are also involved in the area of occupational health management. There are, however, considerable obstacles to a digital modernization of the health sector, while Germany was also relatively late in introducing a digital health card. Among the significant benefits, for patients, insurers and care providers, are innovations in the area of digital check-ups and preventative care, telemedicine, digitalized after-care and an optimization of billing processes. Germany – in an EU context – ranks mid-table with regard to eHealth applications in the hospital industry, however, on the basis of a good positioning in terms of ICT and the large domestic market, Germany has the potential to become both a leading actor and a leading market in the medium term. From an economic perspective, eHealth progress can help to curb the rise of insurance contributions – digital advances have cost dampening effects, patient benefits and positive effects in the competitive process. Non-uniform health economy standards in EU countries largely prevent national software solutions and other eHealth concepts from easily being scaled-up, i.e. exported. Here, action by the EU is clearly required; including in the promotion and support of cooperation projects.

Weiner, J. P., Yeh, S. et Blumenthal, D. (2013). "The Impact Of Health Information Technology And e-Health On The Future Demand For Physician Services." *Health Aff.(Millwood.)* **32**(11): 1998-2004.

Arguably, few factors will change the future face of the American health care workforce as widely and dramatically as health information technology (IT) and electronic health (e-health) applications. We explore how such applications designed for providers and patients will affect the future demand for physicians. We performed what we believe to be the most comprehensive review of the literature to date, including previously published systematic reviews and relevant individual studies. We estimate that if health IT were fully implemented in 30 percent of community-based physicians' offices, the demand for physicians would be reduced by about 4-9 percent. Delegation of care to nurse practitioners and physician assistants supported by health IT could reduce the future demand for physicians by 4-7 percent. Similarly, IT-supported delegation from specialist physicians to generalists could reduce the demand for specialists by 2-5 percent. The use of health IT could also help address regional shortages of physicians by potentially enabling 12 percent of care to be delivered remotely or asynchronously. These estimated impacts could more than double if comprehensive health IT systems were adopted by 70 percent of US ambulatory care delivery settings. Future predictions of physician supply adequacy should take these likely changes into account.

La télémédecine : de la télémédecine informative à la télémédecine médicale

REVUES DE LITTÉRATURE

Abbott, P. A. et Liu, Y. (2013). "A scoping review of telehealth." *Yearb Med Inform* **8**: 51-58.

OBJECTIVES: This scoping review of the telehealth literature over the past year was conducted to provide a snapshot of some of the current developments in the field. As with any scoping review, only a subset of papers was examined, and the rigorous methods of a systematic review are not applied. **METHODS:** We surveyed selected dimensions of the current literature, specifically targeting telehealth or eHealth interventions at the patient (or micro) level in this scoping review. Considering the lack of clarity around the terms like mHealth, eHealth, telehealth, and telemedicine, efforts were made to understand and harmonize the terminology as part of the review process. **RESULTS:** A total of 171 papers that matched the search criteria were culled from the literature. After discussion and debate, a total of 26 papers were retained and classified into at least one of 5 conceptual categories that were derived from a concept analysis. The five categories are Preventive and Therapeutic Effects; Health Service Utilization; Challenges & Opportunities for Enhanced User Centered Design; Low-powered studies/inconclusive evidence; and Future trends in telehealth. Each of these 5 concept categories are discussed to provide a better understanding of present opportunities, challenges, and the overall prospects for telehealth advancement. **CONCLUSIONS:** The field is expanding and maturing rapidly. There is a need for larger scale studies that balance rigor while reducing translational latency.

Additional attention to implementation science methods is recommended as global telehealth projects accelerate.

Aldehaim, A. Y., et al. (2016). "The Impact of Technology-Based Interventions on Informal Caregivers of Stroke Survivors: A Systematic Review." Telemed J E Health **22**(3): 223-231.

OBJECTIVE: This article is a systematic review of the impact of technology-based intervention on outcomes related to care providers for those who survived a stroke. **MATERIALS AND METHODS:** Literature was identified in the PubMed, PsycINFO, Scopus, and Cochrane databases for evidence on technology-based interventions for stroke survivors' caregivers. The search was restricted for all English-language articles from 1970 to February 2015 that implied technology-based interventions. This review included studies that measured the impact of these types of approaches on one or more of the following: depression and any of the following-problem-solving ability, burden, health status, social support, preparedness, and healthcare utilization by care recipient-as secondary outcomes. Telephone or face-to-face counseling sessions were not of interest for this review. The search strategy yielded five studies that met inclusion criteria: two randomized clinical trials and three pilot/preliminary studies, with diverse approaches and designs. **RESULTS:** Four studies have assessed the primary outcome, two of which reported significant decreases in caregivers' depressive symptoms. Two studies had measured each of the following outcomes-burden, problem-solving ability, health status, and social support-and they revealed no significant differences following the intervention. Only one study assessed caregivers' preparedness and showed improved posttest scores. Healthcare services use by the care recipient was assessed by one study, and the results indicated significant reduction in emergency department visits and hospital re-admissions. **CONCLUSIONS:** Despite various study designs and small sample sizes, available data suggest that an intervention that incorporates a theoretical-based model and is designed to target caregivers as early as possible is a promising strategy. Furthermore, there is a need to incorporate a cost-benefit analysis in future studies.

Anaes (2003). Etat des lieux de la téléimagerie médicale en France et perspectives de développement. St Denis la Plaine ANAES: 95, 10 ann., 12 tabl.

La téléimagerie est caractérisée par la transmission d'images entre deux sites distants dans un but d'interprétation et de consultation. Elle fait partie intégrante de la télé médecine. Elle concerne des spécialités diverses telles que la radiologie, l'échographie, l'anatomopathologie ou l'endoscopie. Dans ce rapport, la téléimagerie médicale a été limitée à la télé radiologie, incluant la neuroradiologie pour lesquelles la faisabilité a été démontrée, en particulier dans le domaine des urgences, et à la transmission d'échographies obstétricales. Le développement des technologies de l'information et l'évolution des modes d'exercice de la médecine devraient conduire à un déploiement de ces technologies en France. Dans ce contexte, la DHOS et l'Anaes ont souhaité recenser les facteurs d'échecs et de succès intervenant dans la mise en œuvre de la téléimagerie médicale, à partir d'une analyse critique de la littérature, complétée d'une enquête de terrain. Les facteurs qui interviennent dans la mise en œuvre, le fonctionnement et la pérennité d'une application de téléimagerie médicale sont d'ordre médical, technique, organisationnel, économique et réglementaire (incluant les aspects déontologique et juridique). Après avoir étudié tous les aspects participant à la mise en œuvre de la téléimagerie, l'Anaes liste quelques points clés de ce bilan et expose quelques perspectives à cette technologie.

Bahaadinbeigy, K., et al. (2010). "MEDLINE versus EMBASE and CINAHL for telemedicine searches." Telemed J E Health **16**(8): 916-919.

INTRODUCTION: Researchers in the domain of telemedicine throughout the world tend to search multiple bibliographic databases to retrieve the highest possible number of publications when conducting review projects. Medical Literature Analysis and Retrieval System Online (MEDLINE), Excerpta Medica Database (EMBASE), and Cumulative Index to Nursing and Allied Health Literature (CINAHL) are three popular databases in the discipline of biomedicine that are used for conducting reviews. Access to the MEDLINE database is free and easy, whereas EMBASE and CINAHL are not free and sometimes not easy to access for researchers in small research centers. **OBJECTIVE:** This project sought to compare MEDLINE with EMBASE and CINAHL to estimate what proportion of potentially

relevant publications would be missed when only MEDLINE is used in a review project, in comparison to when EMBASE and CINAHL are also used. METHODS: Twelve simple keywords relevant to 12 different telemedicine applications were searched using all three databases, and the results were compared. RESULTS: About 9%-18% of potentially relevant articles would have been missed if MEDLINE had been the only database used. CONCLUSIONS: It is preferable if all three or more databases are used when conducting a review in telemedicine. Researchers from developing countries or small research institutions could rely on only MEDLINE, but they would lose 9%-18% of the potentially relevant publications. Searching MEDLINE alone is not ideal, but in a resource-constrained situation, it is definitely better than nothing.

Baniasadi, T., Niakan Kalhori, S. R., Ayyoubzadeh, S. M., Zakerabasali, S. et Pourmohamadkhan, M. (2018). "Study of challenges to utilise mobile-based health care monitoring systems: A descriptive literature review." *J Telemed Telecare* **24**(10): 661-668.

Mobile health encompasses remote and wireless applications to provide health services. Despite the advantages of applying mobile-based monitoring systems, there are challenges and limitations; understanding the challenges may assist in identifying available solutions and optimising decision-making to apply mHealth technologies more practically. This study aimed to investigate the main challenges related to mHealth-based systems for health monitoring purposes. This review was carried out through investigation of English evidence from four databases, including Scopus, PubMed, Embase, and Web of Science, using a defined search strategy from 2013 to 2017. Two independent researchers reviewed the results based on PRISMA guidelines, and data was categorised using a bottom-up approach to reach a framework for the most general challenges. Among the 105 papers obtained, eight works were selected. The revealed challenges were categorised into six main branches across a tree (with 55 nodes, four levels) including user-related, infrastructure, process, management, resource and training challenges. Identifying the resolvable and preventable challenges, such as those related to training, design might play a crucial role in preventing loss of resources and in growing the success rate of a project, particularly if considered in national level projects.

Bergmo, T. S. (2010). "Economic evaluation in telemedicine - still room for improvement." *J Telemed Telecare* **16**(5): 229-231.

It has been reported that economic evaluations of telemedicine are less adherent to methodological standards than economic evaluations in other fields. Systematic reviews also show that most studies evaluate benefits in terms of the cost savings, with no assessment of the health benefits for patients. In a recent review of economic evaluations, I found 33 articles that measured both costs and non-resource consequences of using telemedicine in direct patient care. This represents a considerable increase compared to previous reviews. The articles analysed were highly diverse in both study context and applied methods. Most studies used multiple outcome measures, such as diagnostic accuracy, blood glucose levels, wound size or quality-adjusted life-years gained. The effectiveness measures appeared more consistent and well reported than the costings. Objectives, study design and choice of comparators were mostly well reported. However, most studies lacked information on perspective and costing method, few used general statistics and sensitivity analysis to assess validity, and even fewer used marginal analysis. These shortcomings in economic evaluation methodology are relatively common and have been found in other fields of research.

Blackburn, S., et al. (2011). "A systematic review of digital interactive television systems and their applications in the health and social care fields." *J Telemed Telecare* **17**(4): 168-176.

We conducted a systematic review of the applications and technical features of digital interactive television (DITV) in the health and social care fields. The Web of Knowledge and IEEE Xplore databases were searched for articles published between January 2000 and March 2010 which related to DITV systems facilitating the communication of information to/from an individual's home with either a health or social care application. Out of 1679 articles retrieved, 42 met the inclusion criteria and were selected for review. An additional 20 articles were obtained from online grey literature sources. Twenty-five DITV systems operating in health and social care were identified, including seven commercial systems. The most common applications were related to health care, such as vital signs

monitoring (68% of systems) and health information or advice (56% of systems). The most common technical features of DITV systems were two-way communication (88%), medical peripherals (68%), on-screen messaging (48%) and video communication (36%). Digital interactive television has the potential to deliver health and social care to people in their own homes. However, the requirement for a high-bandwidth communications infrastructure, the usability of the systems, their level of personalisation and the lack of evidence regarding clinical and cost-effectiveness will all need to be addressed if this approach is to flourish.

Caffery, L. J. et Smith, A. C. (2010). "A literature review of email-based telemedicine." Stud Health Technol Inform **161**: 20-34.

A structured analysis of peer-reviewed literature about the delivery of health services by email was undertaken for this review. A total of 185 articles were included in the analysis. These articles were thematically categorised for medical specialty, participants, sub-topic, study design and service-delivery application. It was shown that email-based telemedicine can be practiced in a large number of medical specialties and has application in primary consultation, second opinion consultation, teleradiology and administrative roles (e.g. e-referral). Email has niche applications in low-bandwidth, image-based specialties (e.g. dermatology, pathology, wound care and ophthalmology) where attached digital camera images were used for teleradiology. Diagnostic accuracy of these images was the predominant topic of research and results show email as a valid means of delivering these medical services. Email is also often used in general practice as an adjunct for face-to-face consultation. Further, a number of organisations have significantly improved the efficiency of their outpatient services when using email as a triage or e-referral system. Email-based telemedicine provides specialist medical opinion in the majority of reviewed services and is most likely to be instigated by the patient's primary care giver. However, email-consultations between patient and primary care and patient and secondary care are not uncommon. Most email services are implemented using ordinary email. However, a number of organisations have developed purpose-written email applications to support their telemedicine service due to impediments of using ordinary email. These impediments include lack of management tools for: the allocation and auditing of cases for a timely response and the co-ordination of effort in a multi-clinician, multi-disciplinary service. The ability to encrypt ordinary email thereby securing patient confidentiality is also regarded as difficult when using ordinary email. Hence, alternative web-based email applications where the encryption can be implemented using the more user-friendly HTTPS have become popular. Much of the reviewed literature is descriptive or anecdotal and hence, suffers from lack of conclusive results regarding positive patient outcomes. This may account for email-based telemedicine generally being regarded as underutilised. However, the potential is well recognised.

Caffery, L. J., Taylor, M., Gole, G., et al. (2019). "Models of care in tele-ophthalmology: A scoping review." J Telemed Telecare **25**(2): 106-122.

The objective of this review was to identify and describe telehealth models of care for ophthalmic services. We conducted a scoping review of the literature to identify how ophthalmic care can be delivered by telehealth. We searched the PubMed database to identify relevant articles which were screened based on pre-defined inclusion criteria. For included articles, data were extracted, categorised and analysed. Synthesis of findings was performed narratively. The scoping review included 78 articles describing 62 discrete tele-ophthalmic models of care. Tele-ophthalmic models of care can be used for consultative service, screening, triage and remote supervision. The majority of services were for general eye care and triage (n = 17; 26%) or emergency services (n = 8; 12%). The most common conditions for disease-specific models of care were diabetic retinopathy (n = 14; 21%), and glaucoma (n = 8; 12%). Most models of care involved local clinicians capturing images and transmitting them to an ophthalmologist for assessment. This scoping review demonstrated tele-ophthalmology to be feasible for consultation, screening, triage and remote supervision applications across a broad range of ophthalmic conditions. A large number of models of care have been identified and described in this review. Considerable collaboration between patient-end clinicians and substantial infrastructure is typically required for tele-ophthalmology.

Carrasqueiro, S., et al. (2011). "Evaluation of telephone triage and advice services: a systematic review on methods, metrics and results." *Stud Health Technol Inform* **169**: 407-411.

Telephone triage and advice services (TTAS) have been increasingly used to assess patients' symptoms, provide information and refer patients to appropriate levels of care (attempting to pursue efficiency and quality of care gains while ensuring safety). However, previous reviews have pointed out for the need for adequately evaluating TTAS. AIMS: To review TTAS evaluation studies, compile methodologies and metrics used and compare results. Systematic search in PubMed database; data collection and categorization by TTAS features and context, type of evaluation, methods, metrics and results; critical assessment of studies; discussion on research needs. 395 articles screened, 55 of them included in the analysis. In conclusion, several aspects of TTAS impact on healthcare systems remain unclear either due to a lack of research (e.g. on long term clinical outcomes, clinical pathways, safety, enhanced access) or because of huge disparities in existing studies on the accuracy of advice, patient compliance, system use, satisfaction and economic evaluation. Further research on TTAS impact is required, comprising multiple perspectives and broad range of metrics.

Dal Grande, E. (2009). *Telehealth Literature Review*. Kingston Canadian Society of Telehealth: 96.

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[sct.org/en/index.php?module=library&VV_DocumentManager_op=downloadFile&VV_File_id=538](http://www.cst-sct.org/en/index.php?module=library&VV_DocumentManager_op=downloadFile&VV_File_id=538)

Cette revue de la littérature a été préparée pour les membres de la Société canadienne de télésanté. Elle présente un portrait des développements qui sont survenus dans le domaine de la télésanté au cours des deux dernières années. Le rapport classe ces développements selon différentes thématiques.

Davalos, M. E., et al. (2009). "Economic evaluation of telemedicine: review of the literature and research guidelines for benefit-cost analysis." *Telemed J E Health* **15**(10): 933-948.

Telemedicine programs provide specialty health services to remote populations using telecommunications technology. This innovative approach to medical care delivery has been expanding for several years and currently covers various specialty areas such as cardiology, dermatology, and pediatrics. Economic evaluations of telemedicine, however, remain rare, and few of those conducted have accounted for the wide range of economic costs and benefits. Rigorous benefit-cost analyses of telemedicine programs could provide credible and comparative evidence of their economic viability and thus lead to the adoption and/or expansion of the most successful programs. To facilitate more advanced economic evaluations, this article presents research guidelines for conducting benefit-cost analyses of telemedicine programs, emphasizing opportunity cost estimation, commonly used program outcomes, and monetary conversion factors to translate outcomes to dollar values. The article concludes with specific recommendations for future research.

de la Torre Diez, I., et al. (2016). "Monitoring and Follow-up of Chronic Heart Failure: a Literature Review of eHealth Applications and Systems." *J Med Syst* **40**(7): 179.

In developed countries heart failure is one of the most important causes of death, followed closely by strokes and other cerebrovascular diseases. It is one of the major healthcare issues in terms of increasing number of patients, rate of hospitalizations and costs. The main aim of this paper is to present telemedicine applications for monitoring and follow-up of heart failure and to show how these systems can help reduce costs of administering heart failure. The search for e-health applications and systems in the field of telemonitoring of heart failure was pursued in IEEE Xplore, Science Direct, PubMed and Scopus systems between 2005 and the present time. This search was conducted between May and June 2015, and the articles deemed to be of most interest about treatment, prevention, self-empowerment and stabilization of patients were selected. Over 100 articles about telemonitoring of heart failure have been found in the literature reviewed since 2005, although the most interesting ones have been selected from the scientific standpoint. Many of them show that telemonitoring of patients with a high risk of heart failure is a measure that might help to reduce the risk of suffering from the disease. Following the review conducted, it can be stated that via

the research articles analysed that telemonitoring systems can help to reduce the costs of administering heart failure and result in less re-hospitalization of patients.

de Waure, C., et al. (2012). "Telemedicine for the reduction of myocardial infarction mortality: a systematic review and a meta-analysis of published studies." Telem J E Health **18**(5): 323-328.

INTRODUCTION: Advances in electronics and communications have changed modern medicine: telemedicine allows patient assessment and monitoring to facilitate healthcare at a distance. The aim of this study was to perform a systematic review and meta-analysis to assess how telemedicine systems, including early telemetry of electrocardiograms, can improve health outcomes in patients with coronary artery disease and, in particular, acute myocardial infarction (AMI). **METHODS:** Studies dealing with telemedicine applications in managing AMI that were conducted before January 22, 2010, published in English or Italian, were identified in PubMed and ISI Web of Knowledge searches. The meta-analysis was performed to assess the efficacy of telemedicine versus standard measures in reducing mortality. Relative risk (RR) with 95% confidence interval was used to report results and the I(2) test to evaluate heterogeneity. **RESULTS:** Five of the 39 articles retrieved were selected; all studies demonstrated the efficacy of telemedicine applications. Only three studies were judged to be comparable and suitable for combining data. This meta-analysis showed that the RR for in-hospital mortality from AMI was 0.65 (95% confidence interval, 0.42-0.99) for the telemedicine group, without heterogeneity. **CONCLUSIONS:** Telemedicine may improve health outcomes of patients with AMI. However, heterogeneity in study design and end points of most studies limited the number of articles that could be subjected to our meta-analysis.

Ehlert, A. et Oberschachtsiek, D. (2019). "Can telehealth reduce health care expenditure? A lesson from German health insurance data." Int J Health Plann Manage.

This study analyzes a telemedical program for chronic heart failure in Germany with respect to economic and treatment indicators. The program entails a routine data-based preselection of the insured and specific treatment intensities for low- and high-risk patients. This study complements previous research by considering differentiated end points such as mortality and rehospitalization as well as ambulatory, outpatient, and medication costs to account for potential cost shifts. In addition, different time frames and regional characteristics are dealt with. A difference-in-differences approach accounts for potential self-selection into the voluntary program. Our results challenge the current paradigm of program-induced cost shifting between hospital and ambulatory care. Except for a short-term effect in the lower-risk group, the program is associated with raising hospital admission rates as well as higher costs in all categories, while mortality is significantly reduced. The findings are robust as to various sensitivity checks.

Ekeland, A. G., et al. (2010). "Effectiveness of telemedicine: a systematic review of reviews." Int J Med Inform **79**(11): 736-771.

OBJECTIVES: To conduct a review of reviews on the impacts and costs of telemedicine services. **METHODS:** A review of systematic reviews of telemedicine interventions was conducted. Interventions included all e-health interventions, information and communication technologies for communication in health care, Internet based interventions for diagnosis and treatments, and social care if important part of health care and in collaboration with health care for patients with chronic conditions were considered relevant. Each potentially relevant systematic review was assessed in full text by one member of an external expert team, using a revised check list from EPOC (Cochrane Effective Practice and Organisation of Care Group) to assess quality. Qualitative analysis of the included reviews was informed by principles of realist review. **RESULTS:** In total 1593 titles/abstracts were identified. Following quality assessment, the review included 80 heterogeneous systematic reviews. Twenty-one reviews concluded that telemedicine is effective, 18 found that evidence is promising but incomplete and others that evidence is limited and inconsistent. Emerging themes are the particularly problematic nature of economic analyses of telemedicine, the benefits of telemedicine for patients, and telemedicine as complex and ongoing collaborative achievements in unpredictable processes. **CONCLUSIONS:** The emergence of new topic areas in this dynamic field is notable and reviewers are starting to explore new questions beyond those of clinical and cost-effectiveness. Reviewers point to a

continuing need for larger studies of telemedicine as controlled interventions, and more focus on patients' perspectives, economic analyses and on telemedicine innovations as complex processes and ongoing collaborative achievements. Formative assessments are emerging as an area of interest.

Ekeland, A. G., et al. (2012). "Methodologies for assessing telemedicine: a systematic review of reviews." *Int J Med Inform* **81**(1): 1-11.

BACKGROUND AND OBJECTIVES: Previous reviews have expressed concerns about the quality of telemedicine studies. There is debate about shortcomings and appropriate methodologies. The aim of this review of systematic reviews of telemedicine is to summarize methodologies used in telemedicine research, discuss knowledge gaps and recommendations and suggest methodological approaches for further research. **METHODS:** We conducted a review of systematic reviews of telemedicine according to a protocol listing explicit methods, selection criteria, data collection and quality assessment procedures. We included reviews where authors explicitly addressed and made recommendations for assessment methodologies. We did a qualitative analysis of the reviews included, sensitized by two broad methodological positions; positivist and naturalistic approaches. The analysis focused on methodologies used in the primary studies included in the reviews as reported by the review authors, and methodological recommendations made by the review authors. **RESULTS:** We identified 1593 titles/abstracts. We included 50 reviews that explicitly addressed assessment methodologies. One group of reviews recommended larger and more rigorously designed controlled studies to assess the impacts of telemedicine; a second group proposed standardisation of populations, and/or interventions and outcome measures to reduce heterogeneity and facilitate meta-analysis; a third group recommended combining quantitative and qualitative research methods; and others applying different naturalistic approaches including methodologies addressing mutual adaptations of services and users; politically driven action research and formative research aimed at collaboration to ensure capacity for improvement of services in natural settings. **CONCLUSIONS:** Larger and more rigorous studies are crucial for the production of evidence of effectiveness of unambiguous telemedicine services for pre defined outcome measures. Summative methodologies acknowledging telemedicine as complex innovations and outcomes as partly contingent on values, meanings and contexts are also important. So are formative, naturalistic methodologies that acknowledge telemedicine as ongoing collaborative achievements and engage with stakeholders, including patients to produce and conceptualise new and effective telemedicine innovations.

Enam, A., Torres-Bonilla, J. et Eriksson, H. (2018). "Evidence-Based Evaluation of eHealth Interventions: Systematic Literature Review." *J Med Internet Res* **20**(11): e10971.

BACKGROUND: Until now, the use of technology in health care was driven mostly by the assumptions about the benefits of electronic health (eHealth) rather than its evidence. It is noticeable that the magnitude of evidence of effectiveness and efficiency of eHealth is not proportionate to the number of interventions that are regularly conducted. Reliable evidence generated through comprehensive evaluation of eHealth interventions may accelerate the growth of eHealth for long-term successful implementation and help to experience eHealth benefits in an enhanced way. **OBJECTIVE:** This study aimed to understand how the evidence of effectiveness and efficiency of eHealth can be generated through evaluation. Hence, we aim to discern (1) how evaluation is conducted in distinct eHealth intervention phases, (2) the aspects of effectiveness and efficiency that are typically evaluated during eHealth interventions, and (3) how eHealth interventions are evaluated in practice. **METHODS:** A systematic literature review was conducted to explore the evaluation methods for eHealth interventions. Preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines were followed. We searched Google Scholar and Scopus for the published papers that addressed the evaluation of eHealth or described an eHealth intervention study. A qualitative analysis of the selected papers was conducted in several steps. **RESULTS:** We intended to see how the process of evaluation unfolds in distinct phases of an eHealth intervention. We revealed that in practice and in several conceptual papers, evaluation is performed at the end of the intervention. There are some studies that discuss the importance of conducting evaluation throughout the intervention; however, in practice, we found no case study that followed this. For our second research question, we discovered aspects of efficiency and effectiveness that are proposed to be assessed during interventions. The aspects that were recurrent in the conceptual papers include clinical, human and social, organizational, technological, cost, ethical and

legal, and transferability. However, the case studies reviewed only evaluate the clinical and human and social aspects. At the end of the paper, we discussed a novel approach to look into the evaluation. Our intention was to stir up a discussion around this approach with the hope that it might be able to gather evidence in a comprehensive and credible way. **CONCLUSIONS:** The importance of evidence in eHealth has not been discussed as rigorously as have the diverse evaluation approaches and evaluation frameworks. Further research directed toward evidence-based evaluation can not only improve the quality of intervention studies but also facilitate successful long-term implementation of eHealth in general. We conclude that the development of more robust and comprehensive evaluation of eHealth studies or an improved validation of evaluation methods could ease the transferability of results among similar studies. Thus, the resources can be used for supplementary research in eHealth.

Farnia, T., Jaulent, M. C. et Steichen, O. (2018). "Evaluation Criteria of Noninvasive Telemonitoring for Patients With Heart Failure: Systematic Review." *J Med Internet Res* **20**(1): e16.

BACKGROUND: Telemonitoring can improve heart failure (HF) management, but there is no standardized evaluation framework to comprehensively evaluate its impact. **OBJECTIVE:** Our objectives were to list the criteria used in published evaluations of noninvasive HF telemonitoring projects, describe how they are used in the evaluation studies, and organize them into a consistent scheme. **METHODS:** Articles published from January 1990 to August 2015 were obtained through MEDLINE, Web of Science, and EMBASE. Articles were eligible if they were original reports of a noninvasive HF telemonitoring evaluation study in the English language. Studies of implantable telemonitoring devices were excluded. Each selected article was screened to extract the description of the telemonitoring project and the evaluation process and criteria. A qualitative synthesis was performed. **RESULTS:** We identified and reviewed 128 articles leading to 52 evaluation criteria classified into 6 dimensions: clinical, economic, user perspective, educational, organizational, and technical. The clinical and economic impacts were evaluated in more than 70% of studies, whereas the educational, organizational, and technical impacts were studied in fewer than 15%. User perspective was the most frequently covered dimension in the development phase of telemonitoring projects, whereas clinical and economic impacts were the focus of later phases. **CONCLUSIONS:** Telemonitoring evaluation frameworks should cover all 6 dimensions appropriately distributed along the telemonitoring project lifecycle. Our next goal is to build such a comprehensive evaluation framework for telemonitoring and test it on an ongoing noninvasive HF telemonitoring project.

Flodgren, G., Rachas, A., Farmer, A. J., et al. (2015). "Interactive telemedicine: effects on professional practice and health care outcomes." *Cochrane Database Syst Rev*(9): Cd002098.

BACKGROUND: Telemedicine (TM) is the use of telecommunication systems to deliver health care at a distance. It has the potential to improve patient health outcomes, access to health care and reduce healthcare costs. As TM applications continue to evolve it is important to understand the impact TM might have on patients, healthcare professionals and the organisation of care. **OBJECTIVES:** To assess the effectiveness, acceptability and costs of interactive TM as an alternative to, or in addition to, usual care (i.e. face-to-face care, or telephone consultation). **SEARCH METHODS:** We searched the Effective Practice and Organisation of Care (EPOC) Group's specialised register, CENTRAL, MEDLINE, EMBASE, five other databases and two trials registers to June 2013, together with reference checking, citation searching, handsearching and contact with study authors to identify additional studies. **SELECTION CRITERIA:** We considered randomised controlled trials of interactive TM that involved direct patient-provider interaction and was delivered in addition to, or substituting for, usual care compared with usual care alone, to participants with any clinical condition. We excluded telephone only interventions and wholly automatic self-management TM interventions. **DATA COLLECTION AND ANALYSIS:** For each condition, we pooled outcome data that were sufficiently homogenous using fixed effect meta-analysis. We reported risk ratios (RR) and 95% confidence intervals (CI) for dichotomous outcomes, and mean differences (MD) for continuous outcomes. **MAIN RESULTS:** We included 93 eligible trials (N = 22,047 participants), which evaluated the effectiveness of interactive TM delivered in addition to (32% of studies), as an alternative to (57% of studies), or partly substituted for usual care (11%) as compared to usual care alone. The included studies recruited patients with the following clinical conditions: cardiovascular disease (36), diabetes (21), respiratory conditions (9), mental health or substance abuse conditions (7), conditions requiring a specialist consultation (6), co morbidities (3),

urogenital conditions (3), neurological injuries and conditions (2), gastrointestinal conditions (2), neonatal conditions requiring specialist care (2), solid organ transplantation (1), and cancer (1). Telemedicine provided remote monitoring (55 studies), or real-time video-conferencing (38 studies), which was used either alone or in combination. The main TM function varied depending on clinical condition, but fell typically into one of the following six categories, with some overlap: i) monitoring of a chronic condition to detect early signs of deterioration and prompt treatment and advice, (41); ii) provision of treatment or rehabilitation (12), for example the delivery of cognitive behavioural therapy, or incontinence training; iii) education and advice for self-management (23), for example nurses delivering education to patients with diabetes or providing support to parents of very low birth weight infants or to patients with home parenteral nutrition; iv) specialist consultations for diagnosis and treatment decisions (8), v) real-time assessment of clinical status, for example post-operative assessment after minor operation or follow-up after solid organ transplantation (8) vi), screening, for angina (1). The type of data transmitted by the patient, the frequency of data transfer, (e.g. telephone, e-mail, SMS) and frequency of interactions between patient and healthcare provider varied across studies, as did the type of healthcare provider/s and healthcare system involved in delivering the intervention. We found no difference between groups for all-cause mortality for patients with heart failure (16 studies; N = 5239; RR:0.89, 95% CI 0.76 to 1.03, P = 0.12; I(2) = 44%) (moderate to high certainty of evidence) at a median of six months follow-up. Admissions to hospital (11 studies; N = 4529) ranged from a decrease of 64% to an increase of 60% at median eight months follow-up (moderate certainty of evidence). We found some evidence of improved quality of life (five studies; N = 482; MD:-4.39, 95% CI -7.94 to -0.83; P < 0.02; I(2) = 0%) (moderate certainty of evidence) for those allocated to TM as compared with usual care at a median three months follow-up. In studies recruiting participants with diabetes (16 studies; N = 2768) we found lower glycated haemoglobin (HbA1c %) levels in those allocated to TM than in controls (MD -0.31, 95% CI -0.37 to -0.24; P < 0.00001; I(2) = 42%, P = 0.04) (high certainty of evidence) at a median of nine months follow-up. We found some evidence for a decrease in LDL (four studies, N = 1692; MD -12.45, 95% CI -14.23 to -10.68; P < 0.00001; I(2) = 0%) (moderate certainty of evidence), and blood pressure (four studies, N = 1770: MD: SBP:-4.33, 95% CI -5.30 to -3.35, P < 0.00001; I(2) = 17%; DBP: -2.75 95% CI -3.28 to -2.22, P < 0.00001; I(2) = 45% (moderate certainty evidence), in TM as compared with usual care. Seven studies that recruited participants with different mental health and substance abuse problems, reported no differences in the effect of therapy delivered over video-conferencing, as compared to face-to-face delivery. Findings from the other studies were inconsistent; there was some evidence that monitoring via TM improved blood pressure control in participants with hypertension, and a few studies reported improved symptom scores for those with a respiratory condition. Studies recruiting participants requiring mental health services and those requiring specialist consultation for a dermatological condition reported no differences between groups. AUTHORS' CONCLUSIONS: The findings in our review indicate that the use of TM in the management of heart failure appears to lead to similar health outcomes as face-to-face or telephone delivery of care; there is evidence that TM can improve the control of blood glucose in those with diabetes. The cost to a health service, and acceptability by patients and healthcare professionals, is not clear due to limited data reported for these outcomes. The effectiveness of TM may depend on a number of different factors, including those related to the study population e.g. the severity of the condition and the disease trajectory of the participants, the function of the intervention e.g., if it is used for monitoring a chronic condition, or to provide access to diagnostic services, as well as

Frade, S. et Rodrigues, H. (2013). "Benefits, challenges and impact of teleconsultation - a literature review." Stud Health Technol Inform **192**: 1157.

Teleconsultation involves the use of technology so that the medical professionals and patients can interact with each other bringing health to where ever it is needed. Although it has been demonstrated to be feasible and effective its sustainability remains an important question. This paper presents the results of a literature review on teleconsultation, based on the Portuguese context. Although Portugal has some successful projects, a national or international conjoint effort would be more fruitful. Technologically it gets lets costly to provide teleconsultation, as pervasive computing grows. The gap of benefits between teleconsultation and regular consultation will diminish as patients grow fonder into technology. The economic value of this type of consultation remains a difficult

subject, so a small budget economic analysis, based on a break-even method, is suggested. This analysis conducted on Finland shows that teleconsultation can be cost-effective.

Free, C., et al. (2013). "The effectiveness of mobile-health technology-based health behaviour change or disease management interventions for health care consumers: a systematic review." *PLoS Med* **10**(1): e1001362.

BACKGROUND: Mobile technologies could be a powerful media for providing individual level support to health care consumers. We conducted a systematic review to assess the effectiveness of mobile technology interventions delivered to health care consumers. **METHODS AND FINDINGS:** We searched for all controlled trials of mobile technology-based health interventions delivered to health care consumers using MEDLINE, EMBASE, PsycINFO, Global Health, Web of Science, Cochrane Library, UK NHS HTA (Jan 1990-Sept 2010). Two authors extracted data on allocation concealment, allocation sequence, blinding, completeness of follow-up, and measures of effect. We calculated effect estimates and used random effects meta-analysis. We identified 75 trials. Fifty-nine trials investigated the use of mobile technologies to improve disease management and 26 trials investigated their use to change health behaviours. Nearly all trials were conducted in high-income countries. Four trials had a low risk of bias. Two trials of disease management had low risk of bias; in one, antiretroviral (ART) adherence, use of text messages reduced high viral load (>400 copies), with a relative risk (RR) of 0.85 (95% CI 0.72-0.99), but no statistically significant benefit on mortality (RR 0.79 [95% CI 0.47-1.32]). In a second, a PDA based intervention increased scores for perceived self care agency in lung transplant patients. Two trials of health behaviour management had low risk of bias. The pooled effect of text messaging smoking cessation support on biochemically verified smoking cessation was (RR 2.16 [95% CI 1.77-2.62]). Interventions for other conditions showed suggestive benefits in some cases, but the results were not consistent. No evidence of publication bias was demonstrated on visual or statistical examination of the funnel plots for either disease management or health behaviours. To address the limitation of the older search, we also reviewed more recent literature. **CONCLUSIONS:** Text messaging interventions increased adherence to ART and smoking cessation and should be considered for inclusion in services. Although there is suggestive evidence of benefit in some other areas, high quality adequately powered trials of optimised interventions are required to evaluate effects on objective outcomes.

French, B., et al. (2013). "The challenges of implementing a telestroke network: a systematic review and case study." *BMC Med Inform Decis Mak* **13**: 125.

BACKGROUND: The use of telemedicine in acute stroke care can facilitate rapid access to treatment, but the work required to embed any new technology into routine practice is often hidden, and can be challenging. We aimed to collate recommendations and resources to support telestroke implementation. **METHODS:** Systematic search of healthcare databases and the Internet to identify descriptions of the implementation of telestroke projects; interviews with key stakeholders during the development of one UK telestroke network. Supporting documentation from existing projects was analysed to construct a framework of implementation stages and tasks, and a toolkit of documents. Interviews and literature were analysed with other data sources using Normalisation Process Theory as described in the e-Health Implementation Toolkit. **RESULTS:** 61 telestroke projects were identified and contacted. Twenty projects provided documents, 13 with published research detailing four stages of telestroke system development, implementation, use, and evaluation. Interviewees identified four main challenges: engaging and maintaining the commitment of a wide range of stakeholders across multiple organisations; addressing clinicians perceptions of evidence, workload, and payback; managing clinical and technical workability across diverse settings; and monitoring how the system is used and reconfigured by users. **CONCLUSIONS:** Information to guide telestroke implementation is sparse, but available. By using multiple sources of data, sufficient information was collated to construct a web-based toolkit detailing implementation tasks, resources and challenges in the development of a telestroke system for assessment and thrombolysis delivery in acute care. The toolkit is freely available online.

Gagnon, M. P., et al. (2016). "e-Health Interventions for Healthy Aging: A Systematic Review Protocol." *Stud Health Technol Inform* **225**: 954-955.

e-Health interventions could contribute to healthy aging (HA) but their effectiveness has not been synthesised. This study aims to systematically review the effectiveness of e-health interventions for supporting HA. We will perform standardized searches to identify experimental and quasi-experimental studies evaluating the effectiveness of e-health interventions for HA. Outcomes of interest are: wellbeing, quality of life, activities of daily living, leisure activities, knowledge, evaluation of care, social support, skill acquisition and healthy behaviours. We will also consider adverse effects such as social isolation, anxiety, and burden on informal caregivers. Two reviewers will independently assess studies for inclusion and extract data using a standardised tool. We will calculate effect sizes related to e-health interventions. If not possible, we will present the findings in a narrative form. This systematic review will provide unique knowledge on the effectiveness of e-health interventions for supporting HA.

Hailey, D., et al. (2011). "Evidence of benefit from telerehabilitation in routine care: a systematic review." ↓ *Telemed Telecare* **17**(6): 281-287.

We systematically reviewed the evidence on the effectiveness of telerehabilitation (TR) applications. The review included reports on rehabilitation for any disability, other than mental health conditions, and drug or alcohol addiction. All forms of telecommunications technology for TR and all types of study design were considered. Study quality was assessed using an approach that considered both study performance and study design. Judgements were made on whether each TR application had been successful, whether reported outcomes were clinically significant, and whether further data were needed to establish the application as suitable for routine use. Sixty-one scientifically credible studies that reported patient outcomes or administrative changes were identified through computerized literature searches on five databases. Twelve clinical categories were covered by the studies. Those dealing with cardiac or neurological rehabilitation were the most numerous. Thirty-one of the studies (51%) were of high or good quality. Study results showed that 71% of the TR applications were successful, 18% were unsuccessful and for 11% the status was unclear. The reported outcomes for 51% of the applications appeared to be clinically significant. Poorer-quality studies tended to have worse outcomes than those from high- or good-quality studies. We judged that further study was required for 62% of the TR applications and desirable for 23%. TR shows promise in many fields, but compelling evidence of benefit and of impact on routine rehabilitation programmes is still limited. There is a need for more detailed, better-quality studies and for studies on the use of TR in routine care.

HAS (2011). Efficience de la télémédecine : état des lieux de la littérature internationale et cadre d'évaluation. Note de cadrage. St Denis La Plaine HAS: 41 , tabl., fig.

http://www.has-sante.fr/portail/upload/docs/application/pdf/2011-06/cadrage_telemedecine_vf.pdf

Cette note de cadrage concerne la mise en œuvre d'une évaluation médico-économique de la télémédecine par un état des lieux de la littérature internationale. Cette évaluation s'inscrit dans une optique d'aide à la décision publique. Elle vise à apporter des éléments de cadrage sur le déploiement de la télémédecine en France concernant les trois objectifs suivants : Contribuer à la définition d'axes prioritaires de déploiement de la télémédecine à partir de l'identification des projets pilotes et expérimentations les plus efficaces ; proposer un cadre d'évaluation médico-économique en fonction des indicateurs recensés et d'une classification des projets de télémédecine ; identifier des modèles économiques afin de proposer des éléments permettant d'orienter la politique de financement. La réalisation de cette évaluation a pour origine la volonté des pouvoirs publics et des acteurs de terrain de déployer la télémédecine en France. A la suite du décret relatif à la télémédecine publié en octobre 2010, la Direction Générale de l'organisation des soins a annoncé, début 2011, la mise en place d'un plan triennal de déploiement national de la télémédecine. Dans cette dynamique actuelle, les attentes du demandeur sont doubles : d'une part, contribuer à alimenter les axes d'orientation de la politique de déploiement de la télémédecine, et, d'autre part, proposer des outils d'évaluation des expérimentations et projets pilotes concernant les aspects médico-économiques

HAS (2013). Efficience de la télémédecine : état des lieux de la littérature internationale et cadre d'évaluation. Note de cadrage. St Denis La Plaine HAS: 154 , tabl., fig., ann.

https://www.has-sante.fr/portail/jcms/c_1064599/fr/note-de-cadrage-efficiency-de-la-telemedecine-etat-des-lieux-de-la-litterature-internationale-et-cadre-d-evaluation

La télémédecine est une forme de pratique médicale à distance fondée sur l'utilisation des technologies de l'information et de la communication, qui fait l'objet depuis 2011 d'une stratégie nationale de déploiement. Les attentes autour de la télémédecine sont aujourd'hui très importantes et son développement confronte les pouvoirs publics, les patients et les professionnels à de nouvelles problématiques, en particulier celle de l'évaluation médico-économique des projets. La demande de la DGOS à l'origine de ce rapport s'inscrit dans une optique d'aide à la décision publique. A partir d'une revue de la littérature internationale portant sur l'évaluation médico-économique de la télémédecine, sans délimitation du champ à un domaine d'application spécifique, l'objectif de ce rapport est double : Réaliser un état des lieux des études d'évaluation médico-économique de la télémédecine et apprécier l'apport de cette littérature pour alimenter les réflexions concernant la question de l'efficacité de cette forme de pratique médicale, la définition d'axes de déploiement et l'identification de modèles de financement ; Proposer un cadre d'évaluation médico-économique afin de favoriser la mise en œuvre d'évaluations dans le contexte français.

HAS (2019). Évaluer les dispositifs médicaux connectés, y compris ceux faisant appel à l'intelligence artificielle. Saint-Senis HAS: 2 vol. (20 +70).

https://www.has-sante.fr/portail/jcms/c_2905546/fr/evaluer-les-dispositifs-medicaux-connectes-y-compris-cesx-faisant-appel-a-l-intelligence-artificielle?cid=fc_1249599, https://www.has-sante.fr/portail/jcms/c_2845863/fr/specificites-methodologiques-d-evaluation-clinique-des-dispositifs-medicaux-connectes

Ce guide précise les spécificités de l'évaluation clinique à l'attention des industriels qui sollicitent leur remboursement. Si l'évaluation repose sur les mêmes critères que pour tout autre type de dispositif médical, des spécificités liées à leur caractère connecté doivent être prises en compte : rapidité d'évolution de la solution technologique, interactions multiples entre patients, aidants, soignants et autres dispositifs médicaux ou objets, intégration de systèmes experts traitant les données (algorithmes avec ou sans intelligence artificielle).

Hemsley, B., et al. (2016). "Use of the My Health Record by people with communication disability in Australia: A review to inform the design and direction of future research." *Him j*.

BACKGROUND: People with communication disability often struggle to convey their health information to multiple service providers and are at increased risk of adverse health outcomes related to the poor exchange of health information. OBJECTIVE: The purpose of this article was to (a) review the literature informing future research on the Australian personally controlled electronic health record, 'My Health Record' (MyHR), specifically to include people with communication disability and their family members or service providers, and (b) to propose a range of suitable methodologies that might be applied in research to inform training, policy and practice in relation to supporting people with communication disability and their representatives to engage in using MyHR. METHOD: The authors reviewed the literature and, with a cross-disciplinary perspective, considered ways to apply sociotechnical, health informatics, and inclusive methodologies to research on MyHR use by adults with communication disability. RESEARCH OUTCOMES: This article outlines a range of research methods suitable for investigating the use of MyHR by people who have communication disability associated with a range of acquired or lifelong health conditions, and their family members, and direct support workers. CONCLUSION: In planning the allocation of funds towards the health and well-being of adults with disabilities, both disability and health service providers must consider the supports needed for people with communication disability to use MyHR. There is an urgent need to focus research efforts on MyHR in populations with communication disability, who struggle to communicate their health information across multiple health and disability service providers. The design of studies and priorities for future research should be set in consultation with people with communication disability and their representatives.

Holtz, B. et Lauckner, C. (2012). "Diabetes management via mobile phones: a systematic review." *Telemed J E Health* **18**(3): 175-184.

BACKGROUND: This study sought to understand the most common uses and functions of mobile phones in monitoring and managing diabetes, their potential role in a clinical setting, and the current state of research in this area. **METHODS:** We identified peer-reviewed articles published between 2000 and 2010. Twenty-one articles were analyzed for this systematic literature review. **RESULTS:** The majority of studies examined the use of mobile phones from the patient's perspective. Subjects with type 1 diabetes were enrolled exclusively in over 50% of the studies. Seventy-one percent of the studies used a study-specific application, which had supplemental features in addition to text messaging. The outcomes assessed varied considerably across studies, but some positive trends were noted, such as improved self-efficacy, hemoglobin A1c, and self-management behaviors. **CONCLUSIONS:** The studies evaluated showed promise in using mobile phones to help people with diabetes manage their condition effectively. However, many of these studies lacked sufficient sample sizes or intervention lengths to determine whether the results might be clinically or statistically significant. Future research should examine other key issues, such as provider perceptions, integration into a healthcare practice, and cost, which would provide important insight into the use of mobile phones for chronic disease management.

Huibers, L., et al. (2011). "Safety of telephone triage in out-of-hours care: a systematic review." Scand J Prim Health Care **29**(4): 198-209.

OBJECTIVE: Telephone triage in patients requesting help may compromise patient safety, particularly if urgency is underestimated and the patient is not seen by a physician. The aim was to assess the research evidence on safety of telephone triage in out-of-hours primary care. **METHODS:** A systematic review was performed of published research on telephone triage in out-of-hours care, searching in PubMed and EMBASE up to March 2010. Studies were included if they concerned out-of-hours medical care and focused on telephone triage in patients with a first request for help. Study inclusion and data extraction were performed by two researchers independently. Post-hoc two types of studies were distinguished: observational studies in contacts with real patients (unselected and highly urgent contacts), and prospective observational studies using high-risk simulated patients (with a highly urgent health problem). **RESULTS:** Thirteen observational studies showed that on average triage was safe in 97% (95% CI 96.5-97.4%) of all patients contacting out-of-hours care and in 89% (95% CI 86.7-90.2%) of patients with high urgency. Ten studies that used high-risk simulated patients showed that on average 46% (95% CI 42.7-49.8%) were safe. Adverse events described in the studies included mortality (n = 6 studies), hospitalisations (n = 5), attendance at emergency department (n=1), and medical errors (n = 6). **CONCLUSIONS:** There is room for improvement in safety of telephone triage in patients who present symptoms that are high risk. As these have a low incidence, recognition of these calls poses a challenge to health care providers in daily practice.

Inglis, S. C., et al. (2011). "Which components of heart failure programmes are effective? A systematic review and meta-analysis of the outcomes of structured telephone support or telemonitoring as the primary component of chronic heart failure management in 8323 patients: Abridged Cochrane Review." Eur J Heart Fail **13**(9): 1028-1040.

AIMS: Telemonitoring (TM) and structured telephone support (STS) have the potential to deliver specialized management to more patients with chronic heart failure (CHF), but their efficacy is still to be proven. The aim of this meta-analysis was to review randomized controlled trials (RCTs) of TM or STS for all-cause mortality and all-cause and CHF-related hospitalizations in patients with CHF, as a non-invasive remote model of a specialized disease-management intervention. **METHODS AND RESULTS:** We searched all relevant electronic databases and search engines, hand-searched bibliographies of relevant studies, systematic reviews, and meeting abstracts. Two reviewers independently extracted all data. Randomized controlled trials comparing TM or STS to usual care in patients with CHF were included. Studies that included intensified management with additional home or clinic-visits were excluded. Primary outcomes (mortality and hospitalizations) were analysed; secondary outcomes (cost, length of stay, and quality of life) were tabulated. Thirty RCTs of STS and TM were identified (25 peer-reviewed publications (n= 8323) and five abstracts (n= 1482)). Of the 25 peer-reviewed studies, 11 evaluated TM (2710 participants), 16 evaluated STS (5613 participants) with two testing both STS and TM in separate intervention arms compared with usual care. Telemonitoring

reduced all-cause mortality {risk ratio (RR) 0.66 [95% confidence interval (CI) 0.54-0.81], $P < 0.0001$ } and STS showed a similar, but non-significant trend [RR 0.88 (95% CI 0.76-1.01), $P = 0.08$]. Both TM [RR 0.79 (95% CI 0.67-0.94), $P = 0.008$], and STS [RR 0.77 (95% CI 0.68-0.87), $P < 0.0001$] reduced CHF-related hospitalizations. Both interventions improved quality of life, reduced costs, and were acceptable to patients. Improvements in prescribing, patient-knowledge and self-care, and functional class were observed. CONCLUSION: Telemonitoring and STS both appear effective interventions to improve outcomes in patients with CHF. Systematic Review Number: Cochrane Database of Systematic Reviews. 2008:Issue 3. Art. No.: CD007228. DOI: 10.1002/14651858.CD007228.

Johnston, B. (2011). "UK telehealth initiatives in palliative care: a review." *Int J Palliat Nurs* 17(6): 301-308.

This review paper explores the use of telehealth in relation to palliative care in the UK. Information technology (IT) developments are being harnessed throughout society, and there is growing interest in the ways in which they can be used to meet and support patients' health needs in the community. The aim of the literature review was to scope the information available from published and unpublished research, with particular reference to older people. The evidence suggests that, despite the challenges, there are numerous examples of good practice in relation to telehealth, palliative and end-of-life care, and older people. Developments in technology that have increased the capacity to improve care, through reaching greater numbers of people of all age groups, mean that telehealth has much to offer people living with and dying from advanced illness. However, some of the evaluative evidence is limited and further rigour is needed when evaluating future telehealth innovations.

Keijsers, W., et al. (2016). "Physician leadership in e-health? A systematic literature review." *Leadersh Health Serv (Bradf Engl)* 29(3): 331-347.

Purpose This paper aims to systematically review the literature on roles of physicians in virtual teams (VTs) delivering healthcare for effective "physician e-leadership" (PeL) and implementation of e-health. **Design/methodology/approach** The analyzed studies were retrieved with explicit keywords and criteria, including snowball sampling. They were synthesized with existing theoretical models on VT research, healthcare team competencies and medical leadership. **Findings** Six domains for further PeL inquiry are delineated: resources, task processes, socio-emotional processes, leadership in VTs, virtual physician-patient relationship and change management. We show that, to date, PeL studies on socio-technical dynamics and their consequences on e-health are found underrepresented in the health literature; i.e. no single empirical, theoretic or conceptual study with a focus on PeL in virtual healthcare work was identified. **Research limitations/implications** E-health practices could benefit from organization-behavioral type of research for discerning effective physicians' roles and inter-professional relations and their (so far) seemingly modest but potent impact on e-health developments. **Practical implications** Although best practices in e-health care have already been identified, this paper shows that physicians' roles in e-health initiatives have not yet received any in-depth study. This raises questions such as are physicians not yet sufficiently involved in e-health? If so, what (dis)advantages may this have for current e-health investments and how can they best become involved in (leading) e-health applications' design and implementation in the field? **Originality/value** If effective medical leadership is being deployed, e-health effectiveness may be enhanced; this new proposition needs urgent empirical scrutiny.

Koutras, C., et al. (2015). "Socioeconomic impact of e-Health services in major joint replacement: A scoping review." *Technol Health Care* 23(6): 809-817.

BACKGROUND: e-Health is a widespread healthcare practice in the medical community, supported by technology-based applications aiming to deliver health services in an efficient manner, improving the quality of life and providing a wide range of health and socio-economic benefits to patients.

OBJECTIVE: To investigate the use of e-Health and mobile applications for the follow-up of major joint arthroplasty patients and the socio-economic impact of e-Health services on arthroplasty patients.

METHODS: Studies published after 2000 in English language, enrolling patients who underwent total knee or hip replacement, applying e-Health solutions and highlighting the economic benefits obtained by patients, doctors and healthcare systems were considered for inclusion in the present study.

RESULTS: Five studies satisfied our inclusion criteria and were included in qualitative analysis. In this

paper, the use of e-Health for the follow-up of major joint arthroplasty patients and the positive impact in terms of cost, time and hospital visits reduction by applying e-Health solutions on arthroplasty patients are reviewed in detail as reported in the included studies. CONCLUSION: The majority of the included studies reported a positive impact in terms of cost, time and hospital visits reduction.

Kruse, C. S., et al. (2016). "Mobile health solutions for the aging population: A systematic narrative analysis." J Telemed Telecare.

INTRODUCTION: The ubiquitous nature of mobile technology coupled with the acceptance of mobile health (mHealth) among the elderly offers an opportunity to augment the existing medical workforce in long-term care. The objective of this review and narrative analysis is to identify and analyse facilitators and barriers to adoption of mHealth for the elderly. METHODS: Studies over the last year were identified in multiple database indices, and three reviewers examined abstracts ($k = 0.82$) and analysed articles for themes which were tallied in affinity diagrams to identify frequency of occurrence in the literature ($n = 36$). RESULTS: The three facilitators mentioned most often were independence (18%), understanding (13%), and visibility (13%). The three barriers mentioned most often were complexity (21%), limited by users (12%) and ineffective (12%). DISCUSSION AND CONCLUSIONS: The reviewers concluded that the work done so far illustrates that mHealth enables a perception of independence. Future research should focus on the barriers of complexity of technology and improving existing medical literacy in order to facilitate further adoption.

Lehmann, S., et al. (2010). "[Telephone case management: is it beneficial for the care of depression patients in Germany? A systematic literature survey]." Gesundheitswesen **72**(5): e33-37.

BACKGROUND: Strategies are needed to effectively improve the management of depression in Germany. Can telephone case management (TCM) be a promising strategy to improve depression care in the German health-care system? METHODS: A systematic literature review in PubMed, Cochrane Library, ISI Web of Science, PsycINFO and PSYNEXplus for randomised controlled trials (RCT) that evaluate TCM was carried out. RESULTS: Ten RCTs that compared TCM to treatment as usual were found. TCM was more effective in reducing depressive symptoms and in increasing satisfaction with care than treatment as usual. Whether TCM was capable of significantly improving pharmacotherapy compliance remained controversial. DISCUSSION: The effectiveness of TCM seemed to be related to the health-care system structure in which it was implemented. Most studies on TCM were conducted in US-American Health Maintenance Organizations. Thus, it is unclear to what extent these results can be transferred to the German health system. However, in the light of the promising results of these studies it seems to be worthwhile to test TCM also under conditions of the German health-care system.

Linn, A. J., et al. (2011). "Effects of eHealth interventions on medication adherence: a systematic review of the literature." J Med Internet Res **13**(4): e103.

BACKGROUND: Since medication nonadherence is considered to be an important health risk, numerous interventions to improve adherence have been developed. During the past decade, the use of Internet-based interventions to improve medication adherence has increased rapidly. Internet interventions have the potential advantage of tailoring the interventions to the needs and situation of the patient. OBJECTIVE: The main aim of this systematic review was to investigate which tailored Internet interventions are effective in improving medication adherence. METHODS: We undertook comprehensive literature searches in PubMed, PsycINFO, EMBASE, CINAHL, and Communication Abstracts, following the guidelines of the Cochrane Collaboration. The methodological quality of the randomized controlled trials and clinical controlled trials and methods for measuring adherence were independently reviewed by two researchers. RESULTS: A total of 13 studies met the inclusion criteria. All included Internet interventions clearly used moderately or highly sophisticated computer-tailored methods. Data synthesis revealed that there is evidence for the effectiveness of Internet interventions in improving medication adherence: 5 studies (3 high-quality studies and 2 low-quality studies) showed a significant effect on adherence; 6 other studies (4 high-quality studies and 2 low-quality studies) reported a moderate effect on adherence; and 2 studies (1 high-quality study and 1 low-

quality study) showed no effect on patients' adherence. However, most studies used self-reported measurements to assess adherence, which is generally perceived as a low-quality measurement. In addition, we did not find a clear relationship between the quality of the studies or the level of sophistication of message tailoring and the effectiveness of the intervention. This might be explained by the great difference in study designs and the way of measuring adherence, which makes results difficult to compare. There was also large variation in the measured interval between baseline and follow-up measurements. CONCLUSION: This review shows promising results on the effectiveness of Internet interventions to enhance patients' adherence to prescribed long-term medications. Although there is evidence according to the data synthesis, the results must be interpreted with caution due to low-quality adherence measurements. Future studies using high-quality measurements to assess medication adherence are recommended to establish more robust evidence for the effectiveness of eHealth interventions on medication adherence.

Liu, L., et al. (2016). "Smart homes and home health monitoring technologies for older adults: A systematic review." *Int J Med Inform* **91**: 44-59.

BACKGROUND: Around the world, populations are aging and there is a growing concern about ways that older adults can maintain their health and well-being while living in their homes. OBJECTIVES: The aim of this paper was to conduct a systematic literature review to determine: (1) the levels of technology readiness among older adults and, (2) evidence for smart homes and home-based health-monitoring technologies that support aging in place for older adults who have complex needs. RESULTS: We identified and analyzed 48 of 1863 relevant papers. Our analyses found that: (1) technology-readiness level for smart homes and home health monitoring technologies is low; (2) the highest level of evidence is 1b (i.e., one randomized controlled trial with a PEDro score ≥ 6); smart homes and home health monitoring technologies are used to monitor activities of daily living, cognitive decline and mental health, and heart conditions in older adults with complex needs; (3) there is no evidence that smart homes and home health monitoring technologies help address disability prediction and health-related quality of life, or fall prevention; and (4) there is conflicting evidence that smart homes and home health monitoring technologies help address chronic obstructive pulmonary disease. CONCLUSIONS: The level of technology readiness for smart homes and home health monitoring technologies is still low. The highest level of evidence found was in a study that supported home health technologies for use in monitoring activities of daily living, cognitive decline, mental health, and heart conditions in older adults with complex needs.

Ludwig, W., et al. (2012). "Health-enabling technologies for the elderly--an overview of services based on a literature review." *Comput Methods Programs Biomed* **106**(2): 70-78.

BACKGROUND: Services for the elderly based on health-enabling technologies promise to contribute significantly to the efficiency and effectiveness of future health care. Due to this promise, over the last years the scientific community has designed a complex variety of these valuable innovations. A systematic overview of the developed services would help to better understand their opportunities and limitations. OBJECTIVE: To obtain a systematic overview of services for the elderly based on health-enabling technologies and to identify archetypical service categories. METHODS: We conducted a literature review using PubMed and retrieved 1447 publications. We stepwise reduced this list to 27 key publications that describe typical service archetypes. RESULTS: We present six archetypical service categories, namely handling adverse conditions, assessing state of health, consultation and education, motivation and feedback, service ordering and social inclusion and describe their implementation in current research projects.

Mair, F. S., et al. (2012). "Factors that promote or inhibit the implementation of e-health systems: an explanatory systematic review." *Bull World Health Organ* **90**(5): 357-364.

OBJECTIVE: To systematically review the literature on the implementation of e-health to identify: (i) barriers and facilitators to e-health implementation, and (ii) outstanding gaps in research on the subject. METHODS: MEDLINE, EMBASE, CINAHL, PSYCINFO and the Cochrane Library were searched for reviews published between 1 January 1995 and 17 March 2009. Studies had to be systematic reviews, narrative reviews, qualitative metasyntheses or meta-ethnographies of e-health

implementation. Abstracts and papers were double screened and data were extracted on country of origin; e-health domain; publication date; aims and methods; databases searched; inclusion and exclusion criteria and number of papers included. Data were analysed qualitatively using normalization process theory as an explanatory coding framework. FINDINGS: Inclusion criteria were met by 37 papers; 20 had been published between 1995 and 2007 and 17 between 2008 and 2009. Methodological quality was poor: 19 papers did not specify the inclusion and exclusion criteria and 13 did not indicate the precise number of articles screened. The use of normalization process theory as a conceptual framework revealed that relatively little attention was paid to: (i) work directed at making sense of e-health systems, specifying their purposes and benefits, establishing their value to users and planning their implementation; (ii) factors promoting or inhibiting engagement and participation; (iii) effects on roles and responsibilities; (iv) risk management, and (v) ways in which implementation processes might be reconfigured by user-produced knowledge. CONCLUSION: The published literature focused on organizational issues, neglecting the wider social framework that must be considered when introducing new technologies.

Martin, S., Kelly, G., Kernohan, W. G., et al. (2008). "Smart home technologies for health and social care support." *Cochrane Database Syst Rev*(4): Cd006412.

BACKGROUND: The integration of smart home technology to support health and social care is acquiring an increasing global significance. Provision is framed within the context of a rapidly changing population profile, which is impacting on the number of people requiring health and social care, workforce availability and the funding of healthcare systems. OBJECTIVES: To explore the effectiveness of smart home technologies as an intervention for people with physical disability, cognitive impairment or learning disability, who are living at home, and to consider the impact on the individual's health status and on the financial resources of health care. SEARCH STRATEGY: We searched the following databases for primary studies: (a) the Cochrane Effective Practice and Organisation of Care (EPOC) Group Register, (b) the Cochrane Central Register of Controlled Trials (CENTRAL), (The Cochrane Library, issue 1, 2007), and (c) bibliographic databases, including MEDLINE (1966 to March 2007), EMBASE (1980 to March 2007) and CINAHL (1982 to March 2007). We also searched the Database of Abstracts of Reviews of Effectiveness (DARE). We searched the electronic databases using a strategy developed by the EPOC Trials Search Co-ordinator. SELECTION CRITERIA: We included randomised controlled trials (RCTs), quasi-experimental studies, controlled before and after studies (CBAs) and interrupted time series analyses (ITS). Participants included adults over the age of 18, living in their home in a community setting. Participants with a physical disability, dementia or a learning disability were included. The included interventions were social alarms, electronic assistive devices, telecare social alert platforms, environmental control systems, automated home environments and 'ubiquitous homes'. Outcome measures included any objective measure that records an impact on a participant's quality of life, healthcare professional workload, economic outcomes, costs to healthcare provider or costs to participant. We included measures of service satisfaction, device satisfaction and healthcare professional attitudes or satisfaction. DATA COLLECTION AND ANALYSIS: One review author completed the search strategy with the support of a life and health sciences librarian. Two review authors independently screened titles and abstracts of results. MAIN RESULTS: No studies were identified which met the inclusion criteria. AUTHORS' CONCLUSIONS: This review highlights the current lack of empirical evidence to support or refute the use of smart home technologies within health and social care, which is significant for practitioners and healthcare consumers.

McLean, S., et al. (2011). "Telehealthcare for asthma: a Cochrane review." *Cmaj* **183**(11): E733-742.

BACKGROUND: Telehealthcare has the potential to provide care for long-term conditions that are increasingly prevalent, such as asthma. We conducted a systematic review of studies of telehealthcare interventions used for the treatment of asthma to determine whether such approaches to care are effective. METHODS: We searched the Cochrane Airways Group Specialised Register of Trials, which is derived from systematic searches of bibliographic databases including CENTRAL (the Cochrane Central Register of Controlled Trials), MEDLINE, Embase, CINAHL (Cumulative Index to Nursing and Allied Health Literature) and PsycINFO, as well as other electronic resources. We also searched registers of ongoing and unpublished trials. We were interested in studies that measured the following outcomes:

quality of life, number of visits to the emergency department and number of admissions to hospital. Two reviewers identified studies for inclusion in our meta-analysis. We extracted data and used fixed-effect modelling for the meta-analyses. RESULTS: We identified 21 randomized controlled trials for inclusion in our analysis. The methods of telehealthcare intervention these studies investigated were the telephone and video- and Internet-based models of care. Meta-analysis did not show a clinically important improvement in patients' quality of life, and there was no significant change in the number of visits to the emergency department over 12 months. There was a significant reduction in the number of patients admitted to hospital once or more over 12 months (risk ratio 0.25 [95% confidence interval 0.09 to 0.66]). INTERPRETATION: We found no evidence of a clinically important impact on patients' quality of life, but telehealthcare interventions do appear to have the potential to reduce the risk of admission to hospital, particularly for patients with severe asthma. Further research is required to clarify the cost-effectiveness of models of care based on telehealthcare.

McLean, S., et al. (2011). "Telehealthcare for chronic obstructive pulmonary disease." Cochrane Database Syst Rev(7): Cd007718.

BACKGROUND: Chronic obstructive pulmonary disease (COPD) is a disease of irreversible airways obstruction in which patients often suffer exacerbations. Sometimes these exacerbations need hospital care: telehealthcare has the potential to reduce admission to hospital when used to administer care to the patient from within their own home. OBJECTIVES: To review the effectiveness of telehealthcare for COPD compared with usual face-to-face care. SEARCH STRATEGY: We searched the Cochrane Airways Group Specialised Register, which is derived from systematic searches of the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, CINAHL, AMED, and PsycINFO; last searched January 2010. SELECTION CRITERIA: We selected randomised controlled trials which assessed telehealthcare, defined as follows: healthcare at a distance, involving the communication of data from the patient to the health carer, usually a doctor or nurse, who then processes the information and responds with feedback regarding the management of the illness. The primary outcomes considered were: number of exacerbations, quality of life as recorded by the St George's Respiratory Questionnaire, hospitalisations, emergency department visits and deaths. DATA COLLECTION AND ANALYSIS: Two authors independently selected trials for inclusion and extracted data. We combined data into forest plots using fixed-effects modelling as heterogeneity was low ($I^2 < 40\%$). MAIN RESULTS: Ten trials met the inclusion criteria. Telehealthcare was assessed as part of a complex intervention, including nurse case management and other interventions. Telehealthcare was associated with a clinically significant increase in quality of life in two trials with 253 participants (mean difference -6.57 (95% confidence interval (CI) -13.62 to 0.48); minimum clinically significant difference is a change of -4.0), but the confidence interval was wide. Telehealthcare showed a significant reduction in the number of patients with one or more emergency department attendances over 12 months; odds ratio (OR) 0.27 (95% CI 0.11 to 0.66) in three trials with 449 participants, and the OR of having one or more admissions to hospital over 12 months was 0.46 (95% CI 0.33 to 0.65) in six trials with 604 participants. There was no significant difference in the OR for deaths over 12 months for the telehealthcare group as compared to the usual care group in three trials with 503 participants; OR 1.05 (95% CI 0.63 to 1.75). AUTHORS' CONCLUSIONS: Telehealthcare in COPD appears to have a possible impact on the quality of life of patients and the number of times patients attend the emergency department and the hospital. However, further research is needed to clarify precisely its role since the trials included telehealthcare as part of more complex packages.

Meachel, P., et al. (2012). "Capitalizing on the characteristics of mHealth to evaluate its impact." J Health Commun **17 Suppl 1**: 62-66.

The field of mHealth has made significant advances in a short period of time, demanding a more thorough and scientific approach to understanding and evaluating its progress. A recent review of mHealth literature identified two primary research needs in order for mHealth to strengthen health systems and promote healthy behaviors, namely health outcomes and cost-benefits (Meachel et al., 2010). In direct response to the gaps identified in mHealth research, the aim of this paper is to present the study design and highlight key observations and next steps from an evaluation of the mHealth activities within the electronic health (eHealth) architecture implemented by the Millennium Villages Project (MVP) by leveraging data generated through mobile technology itself alongside

complementary qualitative research and costing assessments. The study, funded by the International Development and Research Centre (IDRC) as part of the Open Architecture Standards and Information Systems research project (OASIS II) (Sinha, 2009), is being implemented on data generated by 14 MVP sites in 10 Sub-Saharan African countries including more in-depth research in Ghana, Rwanda, Tanzania, and Uganda. Specific components of the study include rigorous quantitative case-control analyses and other epidemiological approaches (such as survival analysis) supplemented by in-depth qualitative interviews spread out over 18 months, as well as a costing study to assess the impact of mHealth on health outcomes, service delivery, and efficiency.

Midy, F. (1998). La télémédecine : document de travail. Rapport Credes. Paris Credes : 31.

A partir d'une revue de la littérature (Medline, base documentaire du Credes...), ce rapport bibliographique tente tout d'abord une définition de la télémédecine. Il en définit ensuite les enjeux, et fait une évaluation à la fois médicale et économique de ces nouvelles technologies. Il comprend, en annexe, une liste des expérimentations en obstétrique, ainsi qu'une évaluation des résultats du point de vue des décideurs publics, des patientes et des praticiens.

Midy, F., et al. (2000). Télémédecine & évaluation. Aide méthodologique à l'évaluation de la télémédecine. Rapport Credes. Paris M.S.S.P.S.: 80, tabl., graph.

Ce document a pour objectif de faire le point sur ce qu'il est raisonnable d'envisager en termes d'évaluation dans le domaine de la télémédecine. Dans un premier chapitre, les auteurs délimitent leur champ de réflexion en précisant les attendus de l'implantation de la télémédecine ainsi que les objectifs de l'évaluation. Ils font le point dans un deuxième chapitre sur les expériences qui sont décrites dans la littérature internationale et qui présentent un intérêt en termes d'évaluation. Les expériences (françaises et québécoises), pour lesquelles les auteurs ont mené une observation directe sont synthétisées dans le troisième chapitre. Le quatrième chapitre décline quelques principes généraux d'évaluation sous la forme d'un guide d'aide à l'évaluation illustré par des exemples.

Mistry, H. (2012). "Systematic review of studies of the cost-effectiveness of telemedicine and telecare. Changes in the economic evidence over twenty years." J Telemed Telecare **18**(1): 1-6.

A systematic review of studies of the cost-effectiveness of telemedicine and telecare was undertaken from 1990 until September 2010. Twelve databases were searched, using economic evaluation terms combined with telemedicine terms. The search identified 80 studies which were classed as full economic evaluations; the majority (38) were cost-consequence analyses. There were 15 cost-effectiveness analyses (CEA) and seven cost-utility analyses (CUA). In the period January 2004 to September 2010 there were 47 studies. Eleven were CEA and seven were CUA. Economic tools are being increasingly used for telemedicine and telecare studies, although better reporting of the methodologies and findings of the economic evaluations is required. Nonetheless, the results of the review were consistent with previous findings, i.e. there is no further conclusive evidence that telemedicine and telecare interventions are cost-effective compared to conventional health care.

Nangalia, V., et al. (2010). "Health technology assessment review: remote monitoring of vital signs--current status and future challenges." Crit Care **14**(5): 233.

Recent developments in communications technologies and associated computing and digital electronics now permit patient data, including routine vital signs, to be surveyed at a distance. Remote monitoring, or telemonitoring, can be regarded as a subdivision of telemedicine - the use of electronic and telecommunications technologies to provide and support health care when distance separates the participants. Depending on environment and purpose, the patient and the carer/system surveying, analysing or interpreting the data could be separated by as little as a few feet or be on different continents. Most telemonitoring systems will incorporate five components: data acquisition using an appropriate sensor; transmission of data from patient to clinician; integration of data with other data describing the state of the patient; synthesis of an appropriate action, or response or escalation in the care of the patient, and associated decision support; and storage of data. Telemonitoring is currently being used in community-based healthcare, at the scene of medical emergencies, by ambulance

services and in hospitals. Current challenges in telemonitoring include: the lack of a full range of appropriate sensors, the bulk weight and size of the whole system or its components, battery life, available bandwidth, network coverage, and the costs of data transmission via public networks. Telemonitoring also has the ability to produce a mass of data - but this requires interpretation to be of clinical use and much necessary research work remains to be done.

Oliver, D. P., et al. (2012). "A systematic review of the evidence base for telehospice." *Telemed J E Health* **18**(1): 38-47.

Abstract The use of telehealth technologies to overcome the geographic distances in the delivery of hospice care has been termed telehospice. Although telehospice research has been conducted over the last 10 years, little is known about the comprehensive findings within the field. The purpose of this systematic article was to focus on available research and answer the question, What is the state of the evidence related to telehospice services? The article was limited to studies that had been published in the English language and indexed between January 1, 2000 and March 23, 2010. Indexed databases included PubMed and PsycINFO and contained specified key words. Only research published in peer review journals and reporting empirical data, rather than opinion or editorials, were included. A two-part scoring framework was modified and applied to assess the methodological rigor and pertinence of each study. Scoring criteria allowed the evaluation of both quantitative and qualitative methodologies. Twenty-six studies were identified with the search strategy. Although limited in number and in strength, studies have evaluated the use of a variety of technologies, attitudes toward use by providers and consumers, clinical outcomes, barriers, readiness, and cost. A small evidence base for telehospice has emerged over the last 10 years. Although the evidence is of medium strength, its pertinence is strong. The evidence base could be strengthened with randomized trials and additional clinical-outcome-focused research in larger randomized samples and in qualitative studies with better-described samples.

Peeters, J. M., et al. (2011). "Costs and financial benefits of video communication compared to usual care at home: a systematic review." *J Telemed Telecare* **17**(8): 403-411.

We conducted a systematic review of video communication in home care to provide insight into the ratio between the costs and financial benefits (i.e. cost savings). Four databases (PUBMED, EMBASE, COCHRANE LIBRARY, CINAHL) were searched for studies on video communication for patients living at home (up to December 2009). Studies were only included when data about the costs of video communication as well as the financial benefits were presented. The methodological quality of the included studies was assessed. Nine studies, mainly conducted in the US, met the inclusion criteria. The methodological quality was poor, except for one study. Most studies (8 of the 9) did not demonstrate that the financial benefits were significantly greater than the costs of video communication. One study - the only one with a high methodological quality - found that costs for patients who received video communication were higher than for patients who received traditional care. The review found no evidence that the cost of implementing video communication in home care was lower than the resulting financial benefits. More methodologically well conducted research is needed.

Pekmezaris, R., Torte, L., Williams, M., et al. (2018). "Home Telemonitoring In Heart Failure: A Systematic Review And Meta-Analysis." *Health Aff (Millwood)* **37**(12): 1983-1989.

We conducted a meta-analysis of twenty-six randomized controlled trials that tested the effectiveness of home telemonitoring in patients with heart failure for reducing mortality and hospital use. We used the PICOT framework as a tool to address an important variable not previously studied: the timing or duration of monitoring. Specifically, we found that home telemonitoring decreased the odds of all-cause mortality and heart failure-related mortality at 180 days but not at 365 days. Home telemonitoring did not significantly affect the odds of all-cause hospitalization at 90 or 180 days, or of heart failure-related hospitalization at 180 days. At 180 days, home telemonitoring significantly increased the odds of all-cause emergency department visits. Home care provision did not moderate the effects of home telemonitoring on all-cause hospitalization. Recent regulatory changes that relaxed Medicare restrictions on telehealth reimbursement make it imperative that studies fully

describe outcomes (for example, heart failure-related versus all-cause hospitalizations) and deliberately test all essential intervention elements, such as intervention duration.

Puskin, D. S., et al. (2010). "Implementation and evaluation of telehealth tools and technologies." Telemed J E Health **16**(1): 96-102.

In June 2009, the National Center for Research Resources (NCRR), National Institutes of Health (NIH), convened a conference of experts to discuss future directions for research in addressing healthcare disparities through the use of telehealth technologies. As part of this conference, a panel was convened to review the status of current efforts to assess, implement, and evaluate telehealth technologies, and to recommend future directions for research. The panel members provided a series of practical recommendations to those who are contemplating establishing a telehealth service, as well as recommendations to the NIH on future funding for telehealth research. The recommendations to the NIH focused on three broad areas of concern: (1) technology assessment, (2) evaluation, and (3) technical assistance, education, and dissemination. The panel members emphasized the need for NIH to support research in areas that have been seriously underfunded in the past, including but not limited to primary care research, multisite collaborative telehealth studies, nonphysician telehealth services, and methodological development to develop a "gold standard" for telehealth studies.

Rosser, B. A., et al. (2009). "Technologically-assisted behaviour change: a systematic review of studies of novel technologies for the management of chronic illness." J Telemed Telecare **15**(7): 327-338.

A systematic review was conducted to investigate the use of technology in achieving behaviour change in chronic illness. The areas reviewed were: (1) methods employed to adapt traditional therapy from a face-to-face medium to a computer-assisted platform; (2) targets of behaviour change; and (3) level of human (e.g. therapist) involvement. The initial literature search produced 2032 articles. A total of 45 articles reporting 33 separate interventions met the inclusion/exclusion criteria and were reviewed in detail. The majority of interventions reported a theoretical basis, with many arising from a cognitive-behavioural framework. There was a wide range of therapy content. Therapist involvement was reported in 73% of the interventions. A common problem was high participant attrition, which may have been related to reduced levels of human interaction. Instigating successful behaviour change through technological interventions poses many difficulties. However, there are potential benefits of delivering therapy in this way. For people with long-term health conditions, technological self-management systems could provide a practical method of understanding and monitoring their condition, as well as therapeutic guidance to alter maladaptive behaviour.

Saliba, V., et al. (2012). "Telemedicine across borders: a systematic review of factors that hinder or support implementation." Int J Med Inform **81**(12): 793-809.

PURPOSE: Innovative technologies to deliver health care across borders have attracted both evangelists and sceptics. Our aim was to systematically identify factors that hinder or support implementation of cross-border telemedicine services worldwide in the last two decades. METHODS: Two reviewers independently searched ten databases including MEDLINE and EMBASE, in June 2011 including citations from 1990 onwards when at least an abstract was available in English. We also searched ELDIS and INTUTE databases and Internet search engines to identify grey literature. We included studies which (a) described the use of telemedicine to deliver cross-border healthcare and, or (b) described the factors that hinder or support implementation of cross-border telemedicine services. All study designs were included. Two reviewers independently assessed titles and abstracts of articles identified. Papers were allocated to one of four reviewers who extracted relevant data and validated it. We took a qualitative approach to the analysis, conducting a narrative synthesis of the evidence. RESULTS: 6026 records were identified of which 5806 were excluded following screening of titles and abstracts. We assessed 227 full text articles, excluding 133 because they were fatally flawed or did not meet the inclusion criteria, producing a final sample of 94. They involved 76 countries worldwide, most involving collaborations between high and low or middle income countries. Most described services delivering a combination of types of telemedicine but specialties most represented were telepathology, telesurgery, Emergency and trauma telemedicine and teleradiology. Most link health professionals, with only a few linking professionals directly to patients. A main driver for the

development of cross-border telemedicine is the need to improve access to specialist services in low and middle income countries and in underserved rural areas in high income countries. Factors that hinder or support implementation clustered into four main themes: (1) legal factors; (2) sustainability factors; (3) cultural factors; and (4) contextual factors. CONCLUSIONS: National telemedicine programmes may build infrastructure and change mindsets, laying the foundations for successful engagement in cross-border services. Regional networks can also help with sharing of expertise and innovative ways of overcoming barriers to the implementation of services. Strong team leadership, training, flexible and locally responsive services delivered at low cost, using simple technologies, and within a clear legal and regulatory framework, are all important factors for the successful implementation of cross-border telemedicine services.

Shigekawa, E., Fix, M., Corbett, G., Roby, D. H. et Coffman, J. (2018). "The Current State Of Telehealth Evidence: A Rapid Review." *Health Aff (Millwood)* **37**(12): 1975-1982.

Policy makers and practitioners show a continued interest in telehealth's potential to increase efficiency and reach patients facing access barriers. However, telehealth encompasses many applications for varied conditions and populations. It is therefore difficult to draw broad conclusions about telehealth's efficacy. This rapid review examines recent evidence both about telehealth's efficacy by clinical area and about telehealth's impact on utilization. We searched for systematic reviews and meta-analyses of the use of telehealth services by patients of any age for any condition published in English in the period January 2004-May 2018. Twenty systematic reviews and associated meta-analyses are included in this review, covering clinical areas such as mental health and rehabilitation. Broadly, telehealth interventions appear generally equivalent to in-person care. However, telehealth's impact on the use of other services is unclear. Many factors should be carefully considered when weighing the evidence of telehealth's efficacy, including modality, evidence quality, population demographics, and point-in-time measurement of outcomes.

Scott Kruse, C., et al. (2018). "Evaluating barriers to adopting telemedicine worldwide: A systematic review." *J Telemed Telecare* **24**(1): 4-12.
<https://www.ncbi.nlm.nih.gov/pubmed/29320966>

Introduction and objective Studies on telemedicine have shown success in reducing the geographical and time obstacles incurred in the receipt of care in traditional modalities with the same or greater effectiveness; however, there are several barriers that need to be addressed in order for telemedicine technology to spread. The aim of this review is to evaluate barriers to adopting telemedicine worldwide through the analysis of published work. Methods The authors conducted a systematic literature review by extracting the data from the Cumulative Index of Nursing and Allied Health Literature (CINAHL) and PubMed (MEDLINE) research databases. The reviewers in this study analysed 30 articles (nine from CINAHL and 21 from Medline) and identified barriers found in the literature. This review followed the checklist from Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2009. The reviewers organized the results into one table and five figures that depict the data in different ways, organized by: barrier, country-specific barriers, organization-specific barriers, patient-specific barriers, and medical-staff and programmer-specific barriers. Results The reviewers identified 33 barriers with a frequency of 100 occurrences through the 30 articles. The study identified the issues with technically challenged staff (11%), followed by resistance to change (8%), cost (8%), reimbursement (5%), age of patient (5%), and level of education of patient (5%). All other barriers occurred at or less than 4% of the time. Discussion and conclusions Telemedicine is not yet ubiquitous, and barriers vary widely. The top barriers are technology-specific and could be overcome through training, change-management techniques, and alternating delivery by telemedicine and personal patient-to-provider interaction. The results of this study identify several barriers that could be eliminated by focused policy. Future work should evaluate policy to identify which one to lever to maximize the results.

Struijk, D. G. (2012). "e-Health: remote health care models in peritoneal dialysis." *Contrib Nephrol* **178**: 74-78.

A general review is given on advantages and disadvantages of the various forms of e-Health. The sparse available literature on e-Health and peritoneal dialysis is discussed. It is concluded that in

general e-Health interventions lead to small but to moderate positive effects on primary health outcomes, although the evidence still is not fully convincing.

van den Berg, N., et al. (2012). "Telemedicine and telecare for older patients--a systematic review." *Maturitas* **73**(2): 94-114.

Telemedicine is increasingly becoming a reality in medical care for the elderly. We performed a systematic literature review on telemedicine healthcare concepts for older patients. We included controlled studies in an ambulant setting that analyzed telemedicine interventions involving patients aged ≥ 60 years. 1585 articles matched the specified search criteria, thereof, 68 could be included in the review. Applications address an array of mostly frequent diseases, e.g. cardiovascular disease (N=37) or diabetes (N=18). The majority of patients is still living at home and is able to handle the telemedicine devices by themselves. In 59 of 68 articles (87%), the intervention can be categorized as monitoring. The largest proportion of telemedicine interventions consisted of measurements of vital signs combined with personal interaction between healthcare provider and patient (N=24), and concepts with only personal interaction (telephone or videoconferencing, N=14). The studies show predominantly positive results with a clear trend towards better results for "behavioral" endpoints, e.g. adherence to medication or diet, and self-efficacy compared to results for medical outcomes (e.g. blood pressure, or mortality), quality of life, and economic outcomes (e.g. costs or hospitalization). However, in 26 of 68 included studies, patients with characteristic limitations for older patients (e.g. cognitive and visual impairment, communication barriers, hearing problems) were excluded. A considerable number of projects use rather sophisticated technology (e.g. videoconferencing), limiting ready translation into routine care. Future research should focus on how to adapt systems to the individual needs and resources of elderly patients within the specific frameworks of the respective national healthcare systems.

Vegesna, A., et al. (2016). "Remote Patient Monitoring via Non-Invasive Digital Technologies: A Systematic Review." *Telemed J E Health*.

BACKGROUND: We conducted a systematic literature review to identify key trends associated with remote patient monitoring (RPM) via noninvasive digital technologies over the last decade. **MATERIALS AND METHODS:** A search was conducted in EMBASE and Ovid MEDLINE. Citations were screened for relevance against predefined selection criteria based on the PICOTS (Population, Intervention, Comparator, Outcomes, Timeframe, and Study Design) format. We included studies published between January 1, 2005 and September 15, 2015 that used RPM via noninvasive digital technology (smartphones/personal digital assistants [PDAs], wearables, biosensors, computerized systems, or multiple components of the formerly mentioned) in evaluating health outcomes compared to standard of care or another technology. Studies were quality appraised according to Critical Appraisal Skills Programme. **RESULTS:** Of 347 articles identified, 62 met the selection criteria. Most studies were randomized control trials with older adult populations, small sample sizes, and limited follow-up. There was a trend toward multicomponent interventions (n = 26), followed by smartphones/PDAs (n = 12), wearables (n = 11), biosensor devices (n = 7), and computerized systems (n = 6). Another key trend was the monitoring of chronic conditions, including respiratory (23%), weight management (17%), metabolic (18%), and cardiovascular diseases (16%). Although substantial diversity in health-related outcomes was noted, studies predominantly reported positive findings. **CONCLUSIONS:** This review will help decision makers develop a better understanding of the current landscape of peer-reviewed literature, demonstrating the utility of noninvasive RPM in various patient populations. Future research is needed to determine the effectiveness of RPM via noninvasive digital technologies in delivering patient healthcare benefits and the feasibility of large-scale implementation.

Wade, V. A., et al. (2010). "A systematic review of economic analyses of telehealth services using real time video communication." *BMC Health Serv Res* **10**: 233.

BACKGROUND: Telehealth is the delivery of health care at a distance, using information and communication technology. The major rationales for its introduction have been to decrease costs, improve efficiency and increase access in health care delivery. This systematic review assesses the

economic value of one type of telehealth delivery--synchronous or real time video communication-- rather than examining a heterogeneous range of delivery modes as has been the case with previous reviews in this area. METHODS: A systematic search was undertaken for economic analyses of the clinical use of telehealth, ending in June 2009. Studies with patient outcome data and a non-telehealth comparator were included. Cost analyses, non-comparative studies and those where patient satisfaction was the only health outcome were excluded. RESULTS: 36 articles met the inclusion criteria. 22(61%) of the studies found telehealth to be less costly than the non-telehealth alternative, 11(31%) found greater costs and 3 (9%) gave the same or mixed results. 23 of the studies took the perspective of the health services, 12 were societal, and one was from the patient perspective. In three studies of telehealth to rural areas, the health services paid more for telehealth, but due to savings in patient travel, the societal perspective demonstrated cost savings. In regard to health outcomes, 12 (33%) of studies found improved health outcomes, 21 (58%) found outcomes were not significantly different, 2(6%) found that telehealth was less effective, and 1 (3%) found outcomes differed according to patient group. The organisational model of care was more important in determining the value of the service than the clinical discipline, the type of technology, or the date of the study. CONCLUSION: Delivery of health services by real time video communication was cost-effective for home care and access to on-call hospital specialists, showed mixed results for rural service delivery, and was not cost-effective for local delivery of services between hospitals and primary care.

Walker, R. C., Tong, A., Howard, K., et al. (2019). "Patient expectations and experiences of remote monitoring for chronic diseases: Systematic review and thematic synthesis of qualitative studies." *Int J Med Inform* **124**: 78-85.

OBJECTIVES: To describe the range of patients' beliefs, attitudes, expectations, and experiences of remote monitoring for chronic conditions across different healthcare contexts and populations. DESIGN: We searched MEDLINE, Embase, PsychINFO, and CINAHL, Google Scholar, and reference lists of related studies through to July 2017. Thematic synthesis was used to analyse the findings of the primary studies. Study characteristics were examined to explain differences in findings. SETTING: All healthcare settings PARTICIPANTS: Adults with chronic diseases OUTCOMES: Patient beliefs, attitudes, expectations and experiences of remote monitoring RESULTS: We included 16 studies involving 307 participants with chronic obstructive pulmonary disease, heart failure, diabetes, hypertension, and end stage kidney disease. The studies were conducted in 8 countries. We identified four themes: gaining knowledge and triggering actions (tracking and responding to change, prompting timely and accessible care, supporting self-management and shared decision-making); reassurance and security (safety in being alone, peace of mind); concern about additional burden (reluctance to learn something new, lack of trust in technology, avoiding additional out-of-pocket costs), and jeopardising interpersonal connections (fear of being lost in data, losing face to face contact). CONCLUSIONS: For patients with chronic disease, remote monitoring increased their disease-specific knowledge, triggered earlier clinical assessment and treatment, improved self-management and shared decision-making. However, these potential benefits were balanced against concerns about losing interpersonal contact, and the additional personal responsibility of remote monitoring.

Wallace, D. L., et al. (2012). "A systematic review of the evidence for telemedicine in burn care: with a UK perspective." *Burns* **38**(4): 465-480.

A comprehensive systematic review of telemedicine in burn care was carried out. Studies published between 1993 and 2010 were included. The main outcome measures were the level of evidence, technical feasibility, clinical feasibility, clinical management and cost effectiveness. The search strategy yielded 24 studies, none of which were randomised. There were only five studies with a control group, and in three of these the patients act as their own controls. Four studies performed quantitative cost analysis, and five more provide qualitative cost analysis. All studies demonstrate technical and clinical feasibility. If the significant potentials of telemedicine to assist in the acute triage, management guidance and outpatient care are to be realised, then research needs to be undertaken to provide evidence for such investment.

Whiteman, K. L., et al. (2016). "Systematic Review of Integrated General Medical and Psychiatric Self-Management Interventions for Adults With Serious Mental Illness." *Psychiatr Serv*: appips201500521.

OBJECTIVE: Adults with serious mental illness are disproportionately affected by general medical comorbidity, earlier onset of disease, and premature mortality. Integrated self-management interventions have been developed to address both general medical and psychiatric illnesses. This systematic review examined evidence about the effect of self-management interventions that target both general medical and psychiatric illnesses and evaluated the potential for implementation. **METHODS:** Databases, including CINAHL, Cochrane Central, Ovid MEDLINE, PsycINFO, and Web of Science, were searched for articles published between 1946 and July 2015. Studies evaluating integrated general medical and psychiatric self-management interventions for adults with schizophrenia spectrum or mood disorders and general medical comorbidity were included. **RESULTS:** Fifteen studies (nine randomized controlled trials and six pre-post designs) reported on nine interventions: automated telehealth, Health and Recovery Peer program, Helping Older People Experience Success, Integrated Illness Management and Recovery, Life Goals Collaborative Care, Living Well, Norlunga Chronic Disease Self-Management program, Paxton House, and Targeted Training in Illness Management. Most studies demonstrated feasibility, acceptability, and preliminary effectiveness; however, clinical effectiveness could not be established in most studies because of methodological limitations. Factors identified that may deter implementation included operating costs, impractical length, and workforce requirements. **CONCLUSIONS:** Integrated general medical and psychiatric illness self-management interventions appear feasible and acceptable, with high potential for clinical effectiveness. However, implementation factors were rarely considered in intervention development, which may contribute to limited uptake and reach in real-world settings.

Wilcox, M. E. et Adhikari, N. K. (2012). "The effect of telemedicine in critically ill patients: systematic review and meta-analysis." *Crit Care* **16**(4): R127.

INTRODUCTION: Telemedicine extends intensivists' reach to critically ill patients cared for by other physicians. Our objective was to evaluate the impact of telemedicine on patients' outcomes. **METHODS:** We searched electronic databases through April 2012, bibliographies of included trials, and indexes and conference proceedings in two journals (2001 to 2012). We selected controlled trials or observational studies of critically ill adults or children, examining the effects of telemedicine on mortality. Two authors independently selected studies and extracted data on outcomes (mortality and length of stay in the intensive care unit (ICU) and hospital) and methodologic quality. We used random-effects meta-analytic models unadjusted for case mix or cluster effects and quantified between-study heterogeneity by using I^2 (the percentage of total variability across studies attributable to heterogeneity rather than to chance). **RESULTS:** Of 865 citations, 11 observational studies met selection criteria. Overall quality was moderate (mean score on Newcastle-Ottawa scale, 5.1/9; range, 3 to 9). Meta-analyses showed that telemedicine, compared with standard care, is associated with lower ICU mortality (risk ratio (RR) 0.79; 95% confidence interval (CI), 0.65 to 0.96; nine studies, $n = 23,526$; $I^2 = 70\%$) and hospital mortality (RR, 0.83; 95% CI, 0.73 to 0.94; nine studies, $n = 47,943$; $I^2 = 72\%$). Interventions with continuous patient-data monitoring, with or without alerts, reduced ICU mortality (RR, 0.78; 95% CI, 0.64 to 0.95; six studies, $n = 21,384$; $I^2 = 74\%$) versus those with remote intensivist consultation only (RR, 0.64; 95% CI, 0.20 to 2.07; three studies, $n = 2,142$; $I^2 = 71\%$), but effects were statistically similar (interaction $P = 0.74$). Effects were also similar in higher (RR, 0.83; 95% CI, 0.68 to 1.02) versus lower (RR, 0.69; 95% CI, 0.40 to 1.19; interaction, $P = 0.53$) quality studies. Reductions in ICU and hospital length of stay were statistically significant (weighted mean difference (telemedicine-control), -0.62 days; 95% CI, -1.21 to -0.04 days and -1.26 days; 95% CI, -2.49 to -0.03 days, respectively; $I^2 > 90\%$ for both). **CONCLUSIONS:** Telemedicine was associated with lower ICU and hospital mortality among critically ill patients, although effects varied among studies and may be overestimated in nonrandomized designs. The optimal telemedicine technology configuration and dose tailored to ICU organization and case mix remain unclear.

Wootton, R., et al. (2011). "Estimating travel reduction associated with the use of telemedicine by patients and healthcare professionals: proposal for quantitative synthesis in a systematic review." *BMC Health Serv Res* **11**: 185.

BACKGROUND: A major benefit offered by telemedicine is the avoidance of travel, by patients, their carers and health care professionals. Unfortunately, there is very little published information about the extent of avoided travel. We propose to undertake a systematic review of literature which reports credible data on the reductions in travel associated with the use of telemedicine. **METHOD:** The conventional approach to quantitative synthesis of the results from multiple studies is to conduct a meta analysis. However, too much heterogeneity exists between available studies to allow a meaningful meta analysis of the avoided travel when telemedicine is used across all possible settings. We propose instead to consider all credible evidence on avoided travel through telemedicine by fitting a linear model which takes into account the relevant factors in the circumstances of the studies performed. We propose the use of stepwise multiple regression to identify which factors are significant. **DISCUSSION:** Our proposed approach is illustrated by the example of teledermatology. In a preliminary review of the literature we found 20 studies in which the percentage of avoided travel through telemedicine could be inferred (a total of 5199 patients). The mean percentage avoided travel reported in the 12 store-and-forward studies was 43%. In the 7 real-time studies and in a single study with a hybrid technique, 70% of the patients avoided travel. A simplified model based on the modality of telemedicine employed (i.e. real-time or store and forward) explained 29% of the variance. The use of store and forward teledermatology alone was associated with 43% of avoided travel. The increase in the proportion of patients who avoided travel (25%) when real-time telemedicine was employed was significant ($P = 0.014$). Service planners can use this information to weigh up the costs and benefits of the two approaches.

Zhou, M., et al. (2012). "The utilization of telephone follow-up in the advanced cancer population: a review of the literature." *J Comp Eff Res* 1(6): 509-517.

BACKGROUND: Palliative cancer patients often require clinic or hospital follow-up after any treatment intervention they may have received. This is typically done in person at either a hospital or a clinic. In these advanced cancer patients, this may be burdensome and result in attrition. Telephone follow-up is becoming more frequently used as an adjunct to clinical follow-up. It can be conducted for both clinical trials, as well as interventional purposes. The purpose of this study was to review the literature and examine the utility and effectiveness of telephone follow-up in the advanced cancer population. **METHODS:** A literature search was conducted on Medline (1980 - April week 4 2012), Embase (1980 - week 17 2012), the Cochrane Central Register of Controlled Trials (April 2012) and CINAHL (1981-July 31 2012). **RESULTS:** A total of 11 studies were identified that were published between 2001 and 2011. All studies were in the clinical trial setting. Studies that utilized telephone follow-up in the advanced cancer population, as well as studies that compared the feasibility of telephone follow-up with hospital follow-up, were included in this review. Follow-up at week 4 (month 1) was the most common interval for patient contact. Information collected during the contact varied with the study; however, the most commonly used tool was the Edmonton Symptom Assessment System. Other information included analgesic diary, patient feedback, satisfaction with the care and post-treatment side effects, along with a variety of quality of life questionnaires. Some studies provided information to the patient about protocols for care, advice and coping strategies. Attrition was common even with the use of telephone contact in place of clinical follow-up. **CONCLUSION:** Telephone follow-up is a feasible alternative to traditional hospital follow-ups for assessment of symptom palliation. There are fewer burdens on the patient, allowing for a better maintenance of quality of life and lower rates of attrition in clinical trials. Patients had an overall positive opinion of the use of this alternative approach with no common disadvantages. A combination of follow-up strategies, such as clinic follow-up and telephone contact for those not attending, may result in a more comprehensive assessment.

ÉTUDES FRANÇAISES

(2009). "Télémédecine et territoire : dossier." *Réseaux Sante & Territoire*(28): 36 , fig., phot.
[http://www.lalettredegalilee.groupe-galilee.fr/images/lettre_speciale/rst28.pdf](http://www.lalettredagalilee.groupe-galilee.fr/images/lettre_speciale/rst28.pdf)

(2011). "Télémédecine : repères." *Réseaux Sante & Territoire*(40): 30.

La loi Hôpital Patients Santé et Territoires (HPST) de 2009 a donné une définition légale à la télémédecine (article 78) et le décret d'application du 10 octobre 2010 en a précisé le contenu. Les projets de télémédecine se développent surtout à l'hôpital. En ville, l'essor est beaucoup plus timide. Au niveau national, des priorités ont été fixées, et cela va être le tour des régions d'établir leurs programmes d'actions.

(2012). "Télémédecine : beaucoup d'hôpital, peu de ville." Réseaux Sante & Territoire(44): 26-27.

Comme pour l'éducation thérapeutique et les protocoles de coopération dérogatoires, le développement de la télémédecine se fait surtout à l'hôpital. Selon un état des lieux dressé par la Direction générale de l'offre de soins (DGOS) en mars dernier, on compte 130 projets opérationnels ou en expérimentation et presque autant au stade de la conception. A terme, tout le monde ne fera sans doute pas de la télémédecine, mais beaucoup de professionnels de santé pourraient connaître des évolutions dans l'organisation de leur métier en raison du développement de cet outil.

(2015). "Parcours de soins, parcours de santé." Risques & Qualite En Milieu De Soins **12**(3): 88 , tab., graph., fig. <http://www.hygienes.net/boutique/risques-qualite/risques-qualite-volume-xiii-n3-septembre-2015-parcours-de-soins-parcours-de-sante/>

Ce numéro spécial de la revue Risques & Qualité rassemble une série d'articles sur la thématique du parcours de soins, fruit de la contributions d'une quarantaine de rédacteurs. Les articles portent sur des programmes de parcours de soins mis en œuvre par la Cnamts, le ministère chargé de la santé, la Has... mais aussi sur des expériences régionales ou locales. Ils couvrent des situations médicales complexes : les soins aux aînés, la cancérologie, l'insuffisance cardiaque...et plus généralement la sortie de l'hôpital et le retour à domicile, la coopération ville-hôpital, l'organisation territoriale.

Akrich, M. et Meadel, C. (2004). "Problématiser la question des usages." Sciences Sociales Et Sante **22**(1): 5-20.

Les technologies de l'information et de la communication (TIC) ont connu, dans le domaine de la santé, un développement considérable. Celui d'Internet est spectaculaire. A coté du web, on distingue un certain nombre d'applications qui, à défaut de s'être massivement répandues, ont fait l'objet d'une abondante littérature professionnelle, spéculant sur les retombées possibles et s'efforçant d'évaluer les expériences menées. On peut citer l'informatisation des dossiers médicaux, la télésurveillance ou le télémonitoring de patients maintenus à domicile, la téléconsultation, le télédiagnostic, les " staffs " à distance, la téléchirurgie ou le télé-enseignement. Certains auteurs ont tenté de construire des typologies de ces applications, les unes étant basées sur la logique des activités médicales, les autres sur la logique qui préside à leur développement. L'ambition de ce dossier n'est pas d'aller dans un sens ou un autre, mais plutôt de proposer des méthodes et des cadres conceptuels permettant d'analyser la manière dont l'implantation des TIC dans le domaine de la santé est susceptible de transformer les pratiques, les savoirs, les relations entre les différents acteurs impliqués. Le propos de cette introduction est de resituer, de ce point de vue, les articles présentés dans la très ample littérature consacrée aux relations entre TIC et santé et de montrer ce en quoi ils constituent des contributions originales à ces questions.

Allaert, F. A. et Quantin, C. (2018). "Les applications sur smartphones permettront-elles une généralisation de la télémédecine ?" Journal De Gestion Et D'économie Médicales **36**(2-3): 145-152.

[BDSP. Notice produite par ORSRA 8R0xlm9q. Diffusion soumise à autorisation]. Durant des années la télémédecine n'a pas réussi à prendre sa véritable place dans notre système de santé alors qu'elle correspondait à un véritable besoin. Les raisons évoquées étaient les difficultés qu'elle suscitait sur le plan administratif et juridique ainsi que son manque de financement mais la véritable raison était que les conditions techniques ne permettaient pas d'être assez près du patient pour être véritablement efficace. Le développement des smartphones et leur généralisation constituent le chaînon manquant pour rendre la télémédecine efficace et lui permettre de se généraliser.

Allaert, F. A. et Quantin, C. (2012). "Responsabilités et rémunérations des actes de télé-expertise." Journal De Gestion Et D'économie Médicales **30**(4): 219-229.

[BDSP. Notice produite par ORSRA 9I8HR0xI. Diffusion soumise à autorisation]. La télé-expertise, c'est à dire l'aide au diagnostic apportée à un médecin par un autre médecin situé à distance du premier qui lui fait parvenir des informations à l'aide d'un dispositif télématique, est un acte médical qui doit être reconnu comme tel pour son rôle dans l'amélioration de la qualité des soins. Cet article analyse les responsabilités respectives des médecins impliqués dans un acte de télé-expertise et les modalités de rémunération propre à la téléassistance afin de définir le cadre conventionnel ou contractuel qui pourrait être envisagé.

Allaert, F.-A. et Quantin, C. (2009). "Responsabilités et modes de rémunération des actes de téléexpertise." Gestions Hospitalières(488): 403-409.

[BDSP. Notice produite par EHESP s9mAR0x8. Diffusion soumise à autorisation]. Si la télé-médecine est reconnue par la loi Hôpital, patients, santé, territoires, le partage des responsabilités des médecins et la rémunération de leurs actes ne sont toujours pas clairement établis. Les auteurs analysent ici le cas de la téléexpertise, c'est à dire l'aide au diagnostic apporté à un médecin par un médecin 'expert' dans le cadre de la prise en charge du patient.

Allermoz, E. (2013). "Des téléconsultations en psychiatrie (Seine-Maritime)." Médecins : Bulletin D'information De L'ordre National Des Médecins(31): 8-9.

La Seine-Maritime compte deux fois moins de psychiatres que la moyenne nationale. Un dispositif de téléconsultation en psychiatrie gériatrique, coordonné par le centre hospitalier du Rouvray, tente de pallier ce déficit. Ce genre d'initiative est encore rare en France.

Anaes (2003). Etat des lieux de la téléimagerie médicale en France et perspectives de développement. St Denis la Plaine ANAES: 95 , 10 ann., 12 tabl.

La téléimagerie est caractérisée par la transmission d'images entre deux sites distants dans un but d'interprétation et de consultation. Elle fait partie intégrante de la télé-médecine. Elle concerne des spécialités diverses telles que la radiologie, l'échographie, l'anatomopathologie ou l'endoscopie. Dans ce rapport, la téléimagerie médicale a été limitée à la télé-radiologie, incluant la neuroradiologie pour lesquelles la faisabilité a été démontrée, en particulier dans le domaine des urgences, et à la transmission d'échographies obstétricales. Le développement des technologies de l'information et l'évolution des modes d'exercice de la médecine devraient conduire à un déploiement de ces technologies en France. Dans ce contexte, la DHOS et l'Anaes ont souhaité recenser les facteurs d'échecs et de succès intervenant dans la mise en œuvre de la téléimagerie médicale, à partir d'une analyse critique de la littérature, complétée d'une enquête de terrain. Les facteurs qui interviennent dans la mise en œuvre, le fonctionnement et la pérennité d'une application de téléimagerie médicale sont d'ordre médical, technique, organisationnel, économique et réglementaire (incluant les aspects déontologique et juridique). Après avoir étudié tous les aspects participant à la mise en œuvre de la téléimagerie, l'Anaes liste quelques points clés de ce bilan et expose quelques perspectives à cette technologie.

Anap (2004). Compte-rendu d'activité de la Mission Nationale d'Appui en Santé Mentale. Paris MNASM: 62.

La MNASM (Mission nationale d'appui en santé mentale) assure une triple mission : une mission d'aide à la planification en Santé Mentale "sur site" qui se traduit concrètement par la réalisation d'études conduites de façon pluri-professionnelle sur des établissements hospitaliers et services spécialisés dans la prise en charge de la santé mentale, et qui donnent lieu à des propositions d'organisation ou de mode de fonctionnement destinées à optimiser les réponses en terme de santé publique, dans le domaine de la santé mentale ; une mission d'expertise auprès de l'Administration Centrale, pour enrichir sa réflexion, son action, voire construire avec elle des outils à partir de problématiques observées sur le terrain, et participe en appui technique, à des groupes de travail (offre de soins, urgences, métiers, etc.) au niveau national ou régional, auprès des ARH ; une mission de communication et d'information, par le biais notamment d'une publication ("Pluriels") et la participation à des journées d'information et de communication. Ce document présente dans un

premier temps le bilan d'activité de la MNASM, puis dans un second temps, ses considérations générales concernant l'évolution de la santé mentale aujourd'hui.

Anap (2012). La télémédecine en action : 25 projets passés à la loupe. Un éclairage pour le déploiement national. Tome 1 : les grands enseignements. Paris ANAP: 76 , fig., annexes.

<https://www.anap.fr/ressources/outils/detail/actualites/la-telemedecine-en-action-25-projets-passes-a-la-loupe/>

Destiné aux porteurs de projet télémédecine et aux Agences régionales de santé (ARS), ce document a pour ambition de les aider à consolider des organisations de télémédecine existantes ou à mettre en place de nouveaux projets, au travers du retour d'expérience et de la capitalisation réalisés à partir de 25 projets matures. Ces derniers sont analysés en portant une attention particulière au projet médical, aux aspects organisationnels, techniques, juridiques, financiers, aux ressources humaines, à la gouvernance, à la gestion de projet et à l'évaluation, et déclinés en fonction des priorités nationales. L'analyse met en évidence des situations très diverses, liées à la maturité des organisations. Toutefois, ce document identifie 5 facteurs clés de succès : un projet médical répondant à un besoin, un portage médical fort soutenu par un coordonnateur, une organisation adaptée et protocolisée, des nouvelles compétences à évaluer et un modèle économique construit. Le document vise également à favoriser la mise en œuvre du Plan national de déploiement de la télémédecine (résumé de l'éditeur).

Anap (2016). La Télémédecine en action : Construire un projet de télémédecine. Paris ANAP: 25 , fig., annexes.

<http://www.anap.fr/publications-et-outils/publications/detail/actualites/la-telemedecine-en-action-construire-un-projet-de-telemedecine/>

La télémédecine est un acte médical à distance permettant d'envisager des organisations innovantes au service du patient. Elle permet selon les besoins de répondre à des carences de l'offre de soins, de faciliter l'accès à l'expertise ou même d'améliorer la performance des organisations en place. Aussi, afin de répondre aux besoins des porteurs de projets de télémédecine, quelle que soit la pathologie ou la population dont ils cherchent à améliorer la prise en charge et quels que soient les actes de télémédecine mobilisés, l'ANAP a cherché à définir une démarche centrée sur la définition d'un projet médical et un processus de prise en charge qui soient adaptés à toutes les situations.

Andres, E., Talha, S., Zulfiqar, A. A., Hajjam, M., Erve, S., Hajjam, J., Geny, B. et Hajjam El Hassani, A. (2018).

"Current Research and New Perspectives of Telemedicine in Chronic Heart Failure: Narrative Review and Points of Interest for the Clinician." *J Clin Med* **7**(12).

BACKGROUND: This is a narrative review of both the literature and Internet pertaining to telemedicine projects within the field of heart failure, with special attention placed on remote monitoring of second-generation projects and trials, particularly in France. RESULTS: Since the beginning of the 2000's, several telemedicine projects and trials focused on chronic heart failure have been developed. The first telemedicine projects (e.g., TEN-HMS, BEAT-HF, Tele-HF, and TIM-HF) primarily investigated telemonitoring or for the older ones, telephone follow-up. Numerous second-generation telemedicine projects have emerged in Europe over the last ten years or are still under development for computer science heart failure, especially in Europe, such as SCAD, OSICAT, E-care, PRADO-INCADO, and TIM-HF2. The E-care telemonitoring project fits within the telemedicine 2.0 framework, based on connected objects, new information and communication technologies (ICT) and Web 2.0 technologies. E-care is the first telemedicine project including artificial intelligence (AI). TIM-HF2 is the first positive prospective randomized study with regards to EBM with positive significant clinical benefit, in terms of unplanned cardiovascular hospital admissions and all-cause deaths. The potential contribution of second-generation telemedicine projects in terms of mortality, morbidity, and number of hospitalizations avoided is currently under study. Their impact in terms of health economics is likewise being investigated, taking into account that the economic and social benefits brought up by telemedicine solutions were previously validated by the original telemedicine projects.

Andre-Cormier, J. (2009). "L'offre de santé dans les collectivités ultramarines." *Avis Et Rapports Du Conseil Économique Et Social*: 284.

Les onze collectivités françaises d'Outre-mer se caractérisent par un certain nombre de points communs quant à l'état de santé de leurs populations et l'offre de soins dont elles bénéficient. Ce rapport présente la situation sanitaire de chaque collectivité et propose des améliorations communes à plusieurs d'entre elles (promotion et développement de la prévention, de la télémédecine, coopération sanitaire interrégionale et internationale, amélioration du recrutement médical et du financement des hôpitaux...), avant d'analyser les améliorations à apporter au cas par cas, selon les problèmes spécifiques régionaux.

Anfosso, A. et Rebaudo, S. (2011). "Gérontechnologies et contrôle de l'environnement au service du maintien à domicile : le projet Gerhome." *Gérontologie Et Société*(136): 119-131, ill., phot.

[BDSP. Notice produite par FNG HGn9IR0x. Diffusion soumise à autorisation]. Le Centre Scientifique et Technique du Bâtiment (CSTB) travaille au développement de techniques dont l'objectif est d'améliorer le confort, la sécurité et de favoriser le maintien à domicile des personnes âgées. Dans cette perspective, un projet d'étude nommé Gerhome est mené depuis 2006. Pour cela, un équipement de tests en laboratoire permet de développer et d'expérimenter des produits et des services capables de détecter certaines fragilités ou pathologies du vieillissement par un suivi des activités de la personne âgée dans son logement. Les développements portent sur la prochaine génération de systèmes de télésurveillance ou de télé-alarme. (extrait intro.).

APVF (2008). Les hôpitaux de petites villes : une composante indispensable pour une offre de soins de qualité sur tout le territoire : Troisième livre blanc de l'Association des Petites Villes de France. Paris APVF: 37.

Pour la troisième fois en moins de dix ans, l'association des Petites Villes de France publie un livre blanc portant des propositions visant à défendre et à pérenniser les petites structures hospitalières. Il y a dix ans, il s'agissait de répondre à une campagne de dénigrement systématique et à un certain acharnement médiatique assimilant insécurité sanitaire et petits hôpitaux. Il y a cinq ans, il s'agissait de démontrer que les hôpitaux de proximité ne sont pas plus coûteux que les grosses structures hospitalières, bien au contraire. Ces deux attaques subsistent aujourd'hui, relayées par de puissants lobbies du corps hospitalo-universitaire et aggravées par l'évolution très négative de la démographie médicale, qui est un réel problème posé à notre pays. Fidèle à sa vocation de force de propositions, l'APVF a souhaité s'inscrire dans la perspective de la future réforme hospitalière que doit présenter la Ministre de la Santé et qui sera débattue devant le Parlement, car une réforme est bel et bien nécessaire, nous l'avons toujours dit. Elle se doit de concilier rationalisation des dépenses, qualité de la prise en charge et égalité d'accès aux soins sur tout le territoire. Cette dernière assertion ne doit surtout pas être oubliée dans la future loi (résumé d'auteur).

Asip Santé. (2009). Déploiement des systèmes de téléradiologie. Panorama des initiatives en région et recommandations. Paris Asip Santé: 33.

La publication de ce rapport formalise le travail d'état des lieux mené par l'ASiP Santé auprès de plus de 80 acteurs sur le terrain, en concertation avec la Mission pour l'informatisation du système de santé (MISS), la Direction de hospitalisation et de l'organisation des soins (DHOS) et l'Agence nationale d'appui à la performance des établissements de santé et médico-sociaux (ANAP). À partir de cet état des lieux des initiatives existantes en matière de téléradiologie, des recommandations ont été proposées, qui viendront nourrir la construction d'un cadre national d'exigences fonctionnelles et techniques.

Asip Santé, A. (2015). Fiches pédagogiques d'aide à la qualification d'un projet de télémédecine, Paris : Asip Santé

Afin d'accompagner les acteurs qui démarrent un projet de télémédecine (professionnels de santé, porteurs de projets, ARS, industriels...), des fiches pratiques pédagogiques ont été élaborées de façon, notamment, à préciser le champ de la télémédecine, les critères nécessitant la mise en œuvre d'un protocole de coopération, la caractérisation d'un contexte d'éducation thérapeutique des patients, la définition des dispositifs médicaux, les critères de l'authentification forte, et la nécessité du recours à un hébergeur agréé de données de santé.

Astruc, B., Henry, C. et Masson, M. (2013). "Intérêt de la télé-psychiatrie pour la prise en charge des patients : enjeux et questions d'une pratique nouvelle." Annales Médico-psychologiques, revue psychiatrique **171**(2): 61-64.

Résumé Objectifs La télémédecine se développe différemment en fonction des spécialités. La télé-psychiatrie, l'une des plus anciennes applications de la télémédecine, peine à trouver pleinement sa place dans les dispositifs de soins aux patients, et n'est souvent envisagée que comme un palliatif aux distances géographiques. L'objectif principal de cet article est de résumer les enjeux de cette nouvelle pratique et de poser des éléments de réponse à la question de sa place dans nos pratiques actuelles. **Patients et méthodes** Revue de la littérature centrée sur la satisfaction des patients et la comparaison avec la pratique en face-à-face. Revue des recommandations internationales sur la pratique de la télé-psychiatrie. Rappel du cadre éthique, déontologique et juridique en France. **Résultats** L'usage de la vidéo-consultation paraît améliorer l'accès aux soins, peut servir à promouvoir l'éducation thérapeutique, à éviter des déplacements inutiles au patient ou au thérapeute. La satisfaction du patient paraît identique à celle du face-à-face. **Conclusions** La télé-psychiatrie, utilisée de façon appropriée, peut largement contribuer à améliorer les soins dans de nombreux domaines : psychiatrie de liaison, accessibilité aux consultations hyperspécialisées, formation continue des médecins. **Objectives** Telemedicine grows differently among the different specialties. Tele-psychiatry, one of the earliest applications of telemedicine, is struggling to find its full place in patient care, and is often seen only as a geographical distances stopgap. The main objective of this paper is to summarize the stakes of this new practice and to put some answers to the question of its place in our current practices. **Materials and methods** Literature review focused on patient satisfaction and comparison with the practice of face-to-face. Review of international recommendations on the practice of tele-psychiatry. Reminder of its ethical, professional and legal framework in France. **Results** The use of video-consultation appears to improve access to care, may serve to promote patient education, to avoid unnecessary travel to the patient or therapist. Patient satisfaction appears identical to the face-to-face practice. **Conclusions** Tele-psychiatry, used and disclosed appropriately, can greatly contribute to improve care in numerous fields: consultation-liaison psychiatry, accessibility to overspecialised consultations, continuing education of physicians.

Audry, A. et Ghilain, J. C. (2009). Le dispositif médical, Paris : PUF

Quel est le point commun entre une prothèse de hanche, une pompe à insuline, un pacemaker, une IRM, des seringues, une paire de béquilles, des pansements, un robot ? Au sein des industries de santé, ils appartiennent à une même famille : celle des dispositifs médicaux. Ces produits, qui aident au diagnostic et/ou au traitement des pathologies ne sont pourtant pas des médicaments, présentent de nombreuses spécificités : sur le plan réglementaire, ils obéissent à un régime de mise sur le marché particulier, et sur le plan scientifique, leur évaluation préclinique et clinique diffère de celle des médicaments. Les dispositifs médicaux sont aussi, et surtout, un domaine de forte innovation : les enjeux sanitaires qui en découlent sont donc de premier ordre et en pleine évolution (tiré de la 4ème de couv.)

Azzi, J., et al. (2017). "Lorraine. E-santé et coopération multisite. Une réponse aux déserts médicaux." Revue Hospitalière De France(576): 22-23.

[BDSP. Notice produite par EHESP sEBR0xA9. Diffusion soumise à autorisation]. Permettre un accès aux soins équitable et rapide, un recours à des médecins spécialistes dans les déserts médicaux, tel est le nouveau défi du système de soins français. Avec le soutien du groupement de coopération sanitaire Télésanté Lorraine, l'hôpital Saint-Jacques de Dieuze organise, en partenariat avec la clinique Claude-Bernard de Metz et le CHRU de Nancy, des séances de dépistage de la rétinopathie diabétique à distance et des téléconsultations gériatriques. (R.A.)

Bapt, G., et al. (2015). Quelle santé à domicile pour demain ? Paris Fédération des PSAD: 2 vol (35; 18). <https://www.silvereco.fr/wp-content/uploads/2015/01/F%C3%A9d%C3%A9ration-sant%C3%A9-%C3%A0-domicile.pdf>

La Fédération des PSAD a mené un travail prospectif pour comprendre les évolutions prévisibles de la santé à domicile dans les prochaines années. Les traitements à domicile sont appelés à se développer et des solutions nouvelles vont émerger pour accompagner ces évolutions. Il apporte un éclairage global autour de 6 dimensions essentielles : le patient à son domicile, la coordination des soins, la télésanté, l'accès aux soins, des économies pour le système de santé et l'innovation du domicile. Sur la base des conclusions de ce rapport, la fédération a formulé trente et une propositions regroupées en neuf axes structurants: répondre à l'aspiration des patients et de leur famille à être traités chez eux; développer la qualité et la sécurité des soins et prestations à domicile ; promouvoir l'égal accès aux soins à domicile sur tout le territoire ; faire bénéficier l'éducation thérapeutique au plus grand nombre ; structurer une offre efficiente dans le parcours de soins du patient ; développer des logiques de performance et de remboursement en fonction de l'utilisation ou de l'efficacité ; accompagner la diffusion de l'innovation ; mettre en œuvre la télémédecine ; contribuer au partage des données de santé.

Barlet, M., et al. (2012). "Santé en milieu rural : réalités et controverses. Dossier." *Pour*(214): 85-171.
<http://www.grep.fr/pour/numeros/pour214.htm#sommaire>

Réalisé par le Groupe de recherche pour l'éducation et la prospective (Grep) avec le concours des acteurs de terrain (élus locaux, professions de santé?), ce numéro de la revue POUR, paru en juillet 2012, propose d'abord un état des lieux, où il n'est pas seulement question de l'accessibilité des médecins généralistes, mais aussi des difficultés rencontrées par les pharmacies rurales ou des mesures prises pour équilibrer l'offre de soins infirmiers sur le territoire. Il est ensuite question des mesures prises ou à prendre pour améliorer l'offre de soins mais surtout en améliorant l'accès pour les habitants des zones rurales. Ce dossier invite à ne pas se focaliser sur la notion de distance ou de temps de trajet pour se rendre à l'hôpital ou chez le médecin, mais à considérer l'état de santé de la population (proportion de personnes âgées et d'enfants, plus vulnérables), sa mobilité et sa situation sociale. Ainsi, pour l'association Médecins du Monde, "l'enjeu majeur de la santé en milieu rural n'est pas celui du désert médical mais celui de l'accès aux soins de populations précaires". Il présente aussi des arguments pour ou contre les mesures d'incitation à l'installation de jeunes médecins à la campagne. Si les contrats (incitatifs) d'engagement de service public semblent faire leurs preuves en Bourgogne, la régulation (coercitive) de l'offre de soins infirmiers aussi. Et quand certains fustigent de simples "effets d'aubaine", d'autres dénoncent la complexité de dispositifs mal connus des principaux concernés : 95% des internes interrogés au niveau national semblent ne pas connaître ce type de mesures... Plus largement, ce dossier invite à adopter une démarche qualitative, pour évaluer correctement les besoins mais surtout apporter une réponse adaptée. En effet les élus, professionnels de santé et autres acteurs de terrain s'accordent tous pour souligner : l'importance et l'intérêt de toutes les initiatives de coordination entre acteurs sanitaires et sociaux, via des maisons de santé, des rencontres régulières, des dispositifs de transmission d'information... ; le poids de facteurs non économiques dans le choix d'installation des médecins : attractivité du cadre de vie et présence de services, possibilité de travailler en relation avec d'autres professionnels, poids des tâches administratives et de gestion dans l'activité... Quelques retours d'expériences illustrent ce point de vue.

Bazex, J. et Godeau, P. (2006). "La télédermatologie en Midi-Pyrénées. Discussion : La télémédecine." *Bulletin De L'Académie Nationale De Médecine* **190**(2): 331-337.

[BDSP. Notice produite par INIST-CNRS 8vR0xt73. Diffusion soumise à autorisation]. La pratique de la télémédecine en Midi-Pyrénées est devenue courante depuis la création du Centre Européen de Télémédecine. Les dermatologues ont pu précocement avoir accès au centre et développer la télédermatologie. Le service de dermatologie est impliqué pour trois activités différentes : - Participation au Réseau Régional Midi-Pyrénées (Groupement d'intérêt Public). Ce réseau permet aux praticiens privés et hospitaliers qui le souhaitent, d'interroger le spécialiste du CHU et de présenter leurs patients en temps réel. - Organisation de séances de télémédecine consacrées aux discussions de dossiers, confrontations anatomocliniques, échanges d'informations entre spécialistes de différents domaines au sein de la discipline. Plusieurs services français et étrangers (européens, américains, francophones) participent régulièrement à ces rencontres. Enseignement avec notamment la mise en place pour l'inter-région de réunions destinées aux étudiants et pour la région Midi-Pyrénées de

séances de formation médicale continue à l'attention des médecins privés. Les avantages que la télémédecine peut apporter au quotidien ne peuvent être contestés et sont de grand intérêt pour le patient, le médecin et la société. La "communauté médicale hospitalière et privée de Midi-Pyrénées" offre ainsi un visage très innovant et adapté au progrès médical accompagné d'une réelle amélioration de la qualité du service général de santé. Cette approche de la prise en charge médicale ne peut toutefois se soustraire à une évaluation constante de qualité.

Berland, Y. (2002). La démographie des professions de santé. Paris MSSPS: 113.

Ce rapport sur la démographie médicale en France rend compte des résultats de la Mission Démographie des Professions de santé. Bien qu'il constate qu'il n'y a jamais eu autant de professionnels de santé qu'actuellement, il souligne, pour les années à venir, des risques de pénuries géographiques et disciplinaires, puisque le *numerus clausus* 2002 estimé à 4700 aurait pour conséquence de diminuer de 20 % le nombre des médecins. De plus, le vieillissement de la population et le consumérisme médical ne cessent d'accroître la demande de soins. Paradoxalement, le rapport note qu'à côté d'un sureffectif provisoire, "de forts contrastes géographiques" apparaissent. Si les zones urbaines ont une forte densité médicale, les zones péri-urbaines et rurales sont sous-médicalisées. Plusieurs voies d'exploration sont proposées pour pallier à cette évolution : la mise en place d'incitations financières pérennes, la création d'un collaborateur salarié et la multiplication des autorisations d'exercice en cabinet secondaire. Mais il faudrait lutter contre l'isolement du médecin en zone rurale notamment par la télémédecine, en permettant un maillage des zones concernées par un réseau à haut débit facilitant le transport rapide d'informations et d'images numérisées. Ce document est disponible sur le site du ministère chargé de la santé : <http://www.sante.gouv.fr> => Actualités / presse => Les rapports du gouvernement actuel => 2002.

Berland, Y. (2005). Rapport de la Commission démographie médicale. Paris MSSPS: 61 , tabl., graph., carte. <http://www.ladocumentationfrancaise.fr/rapports-publics/054000315/index.shtml>

Ce rapport sur la démographie médicale en France rend compte des résultats de la Commission démographie médicale. Il est articulé autour d'une première partie, qui dessine un état des lieux de la répartition de l'offre de soins médicaux sur le territoire national ; d'une deuxième partie, qui résume les mesures prises au cours des dernières années, d'une part pour se doter d'outils de pilotage de la démographie médicale, d'autre part pour inciter à un exercice dans les territoires déficitaires. La troisième partie énonce les propositions d'amélioration de la Commission.

Boiteux, M.-C. (2017). "Cardiauvergne : Suivi et coordination de l'insuffisance cardiaque par télémédecine." *Revue Hospitalière De France*(575): 20-24, tabl.

[BDSP. Notice produite par EHESP HHH7R0xn. Diffusion soumise à autorisation]. Après 65 ans, l'insuffisance cardiaque chronique représente, toutes pathologies confondues, la première cause d'hospitalisation en France. Pourquoi cette incidence et prévalence en forte croissance ? Le vieillissement de la population ainsi que les progrès obtenus dans le traitement des événements coronaires aigus graves l'expliquent. Le groupement de coopération sanitaire Cardiauvergne assure depuis 2011 le suivi et la coordination de l'insuffisance cardiaque par télémédecine. Avec plus de 1 200 patients déjà inclus, ce dispositif ville-hôpital s'appuie sur l'ensemble des professionnels de santé de proximité. Une étude médico-économique montre son efficacité. (R.A.).

Bonan, B., et al. (2008). "Chimiothérapies à domicile et soins de support. Limites et espoirs." *Techniques Hospitalières*(707): 29-34.

[BDSP. Notice produite par EHESP nsR0xr7E. Diffusion soumise à autorisation]. Avec la mise en place du plan Cancer en 2003, conforté par la circulaire du 22 février 2005 relative à l'organisation des soins en cancérologie, la chimiothérapie à domicile se situe désormais comme étant l'une des priorités nationales. Elle implique une organisation des soins qui permet une prise en charge globale et continue à domicile. La sécurisation du circuit des chimiothérapies devant être validée de la prescription à l'administration et inclure l'ensemble des acteurs, des actes et des médicaments, elle devra être confortée par une informatisation fiable.

Bonhomme, C. (2013). "Qualité de vie en EHPAD. Vers le déploiement d'un projet Mines-Télécom." Revue Hospitalière De France(550): 24-25.

[BDSP. Notice produite par EHESP R0x7F88E. Diffusion soumise à autorisation]. Enseignant chercheur au sein de la filiale Tic & santé Montpellier de l'institut Mines-Télécom, Mounir Mokhtari travaille sur les équipements e-santé et assistance. Il vient de passer quatre ans à Singapour dans un laboratoire CNRS (IPAL, unité mixte internationale) de la ville Etat, dont les 5 200 000 habitants figurent au 2e rang des plus connectés au monde. Objectif : développer une e-qualité de vie pour les personnes âgées dépendantes.

Bourgueil, Y., et al. (2010). "Dossier Insuffisance cardiaque. Une "épidémie" contrôlable ?" Concours Médical **132**(6): 231-247, fig., tabl.

[BDSP. Notice produite par ORSRA 9R0xBEB9. Diffusion soumise à autorisation]. L'insuffisance cardiaque, dont la prévalence et l'incidence augmentent, liées à l'âge et aux comorbidités, représente un problème de santé publique à évolution épidémique. Ce dossier aborde le coût de la maladie, sa prévalence en France, la prise en charge par les réseaux ville-hôpital, le télémonitoring, le diagnostic de l'insuffisance cardiaque, le parcours thérapeutique et le suivi des patients par les professionnels de santé (cardiologue, généraliste et infirmière).

Bismuth, S., Remande, A., Découard, P., Boyer, P., Chicoulaa, B., Hein, C., Soto, M., Arlet, P. et Oustric, S. (2014). "Motifs de recours à la télé-médecine en médecine générale à partir d'une expérimentation en EHPAD." European Research in Telemedicine / La Recherche Européenne en Télé-médecine **3**(2): 77-83.

Résumé En France, la télé-médecine qui consiste à utiliser les technologies de la télécommunication pour le diagnostic médical et les soins de santé est peu développée en médecine générale. Pourtant, les pouvoirs publics et les différents acteurs de cette nouvelle pratique ont conscience que tout se joue maintenant. Nous avons mené une étude rétrospective descriptive de téléconsultations de population âgée à mobilité réduite vivant en EHPAD et nous avons recensé les différents motifs de consultations de médecine générale traités en télé-médecine entre le 20 mai 2011 et le 20 décembre 2012. Ces consultations associaient l'image et le son et se déroulaient en présence d'une partie du personnel de l'EHPAD. Dans la quasi-totalité des cas, le patient et/ou la personne de confiance étaient présents. Notre étude a mis en évidence de nombreux motifs de consultation de médecine générale, qu'il s'agisse de dermatologie, d'angiologie, de gastroentérologie, de cardiologie, de néphrologie, de rhumatologie, de diabétologie, de neurologie, de gériatrie, de psychiatrie ou concernant la prescription médicamenteuse. La télé-médecine paraît être une pratique adaptée aux pathologies prises en charge en médecine générale. Elle favorise la prise en charge pluridisciplinaire du patient sur son lieu de vie. Cette étude basée sur un petit nombre de cas mérite d'être étendue à d'autres EHPAD et en médecine ambulatoire. Summary In France, telemedicine, that is to say the use of telecommunication technologies for medical diagnosis and healthcare, is under-developed in general medicine. However, the public authorities and the different actors of this new practice are aware that everything is now at stake. We led a retrospective, descriptive study of teleconsultations concerning an elderly population with reduced mobility living in a nursing home. We gathered the different reasons for telemedicine consultations in general medicine between the 20th May 2011 and 20th December 2012. These consultations involved a video and audio link and were realized in the presence of some members of the nursing home staff. In almost all cases, the patient and/or their designated proxy were present. Our study revealed a variety of reasons for general medicine consultations, falling within the specialist fields of dermatology, angiology, gastroenterology, cardiology, nephrology, rheumatology, diabetology, neurology, geriatrics, psychiatry and drug prescription. Telemedicine appears to be a suitable practice for the pathologies treated in general medicine, promoting multidisciplinary care in the patient's home. This study, comprising only a small number of cases, merits extension to other nursing homes and to ambulatory care.

Bruguiere, M. T. (2011). Les territoires de santé : rapport d'information. Paris Sénat: 81 , ann. <http://www.senat.fr/rap/r10-600/r10-6001.pdf>

L'offre de soins, dans nombre de territoires français, n'est plus au diapason de la demande. En s'emparant, à son tour, de cette question, la Délégation du Sénat aux collectivités territoriales et à la décentralisation a souhaité l'aborder avec un regard différent : celui des élus locaux. Estimant qu'une politique efficace de protection de la santé ne peut se concevoir sans prendre en compte leur rôle et leurs attentes en la matière, le rapport avance une vingtaine de propositions pour assurer une répartition équilibrée de l'offre de soins sur l'ensemble des territoires.

Caillette-Beaudoin, A., et al. (2014). "La télésurveillance en dialyse péritonéale." Gestions Hospitalières(534): 141-142.

[BDSP. Notice produite par EHESP R0xpBD8k. Diffusion soumise à autorisation]. Caly dial, établissement de santé lyonnais, s'est lancé dans le développement d'un programme de télé-médecine sur tous ses domaines d'activité autorisés : dialyse péritonéale, hémodialyse et insuffisance rénale chronique non dialysée. Convaincu que la coconstruction joue un rôle majeur dans la création de solutions innovantes, Caly dial participe à un "living lab" pour le développement de la télésurveillance en dialyse péritonéale.

Caillette-Beaudoin, A., et al. (2010). "Maladies chroniques cardiovasculaires et métaboliques : apports de la télé-médecine." Revue Hospitalière De France(532): 29-31, graph.

[BDSP. Notice produite par EHESP R0xBD888. Diffusion soumise à autorisation]. La télésurveillance des maladies chroniques montre sa capacité à optimiser la qualité et la sécurité des soins dans de nombreuses pathologies. Illustration avec une expérience menée en Rhône-Alpes auprès de patients insuffisants rénaux chroniques.

Cassagnes, J. (2016/07-08). "Cardiauvergne : service de télésurveillance et de coordination des soins des insuffisants cardiaques." Techniques Hospitalières(758).

Cardiauvergne est un service de télésurveillance et de coordination des soins ouvert en décembre 2011. Deux principes : des professionnels de santé « maîtres du jeu » et une télésurveillance simple. Le dossier patient informatisé (DPI) est accessible grâce à la carte de professionnel de santé (CPS). Un système expert analyse les données et génère des alertes ou alarmes. Une évaluation après quatre ans et 1 084 patients montre un taux de décès de 12,1 % par an (versus 25 % avec prise en charge conventionnelle en Auvergne), des réhospitalisations pour nouvelle poussée d'insuffisance cardiaque réduites à 13,8 % par an (vs 21 % avant Cardiauvergne) avec raccourcissement de la durée moyenne de séjour de 11,5 à 9,4 jours. L'économie est estimée à 5 430 €/patient/an moins le coût de Cardiauvergne qui est à 672 €/patient/an. Le taux de satisfaction est unanimement favorable. Un travail de recherche sur de nouveaux capteurs est en cours.

Chanliau, J. et Simon, P. (2010). "Apports de la télé-médecine dans la gradation des soins." Revue Hospitalière De France(532): 25-28, graph.

[BDSP. Notice produite par EHESP R0xrF7mG. Diffusion soumise à autorisation]. Illustration du rôle que peut jouer la télé-médecine dans la gradation des soins avec le cas du traitement par dialyse du patient en insuffisance rénale chronique. L'article présente également l'expérience développée en Franche-Comté et Midi-Pyrénées dans le champ de la neurologie.

Charrier, N., et al. (2016). "Efficacy and cost effectiveness of telemedicine for improving access to care in the Paris region: study protocols for eight trials." BMC Health Serv Res **16**: 45.

BACKGROUND: With the development of information and communication technologies, telemedicine has been proposed as a way to improve patient management by facilitating access to appropriate diagnosis and treatment. The Paris Ile de France Regional Health Agency is currently funding a comprehensive program of telemedicine experiments. This article describes the protocols for the evaluation of the implementation of telemedicine in the Paris region. METHODS/DESIGN: Over 2,500 patients have been included in eight studies addressing the use of telemedicine in the context of specific diseases or settings. Two projects are randomized controlled trials, while the six other projects

are based on before-after designs (differences in differences studies). Based on the MAST model and the French national framework, we identified endpoints to assess the impact of telemedicine on five dimensions: clinical effectiveness, cost-effectiveness, security of the application, patient satisfaction and quality of life and perception of professionals. DISCUSSION: Telemedicine encompasses a wide range of services and stakeholders, and thus study protocols must be tailored to the specific constraints and interests of the users.

Cinqualbre, J. et Cordier, A. p. (2018). Télémédecine : la vraie médecine de proximité, Strasbourg : Éditions du Signe

La télémédecine, longtemps estampillée violon d'Ingres de quelques illuminés, s'impose aujourd'hui comme un vecteur décisif d'évolution pour l'exercice médical. Avec la possibilité d'effacer les distances et de compacter le temps, la téléconsultation permet au médecin d'effectuer un acte aussi satisfaisant qu'en mode présentiel. Voire plus, en lui offrant des possibilités inédites : recueillir l'expertise d'un collègue spécialiste séance tenante et faire une visite à domicile sans se déplacer. Deux bouleversements dans sa pratique professionnelle qui en appelleront d'autres. L'auteur, Jacques Cinqualbre nous décrit son approche pour concrétiser ces nouvelles avancées en s'impliquant personnellement dans le développement d'une offre complète, matérielle et logicielle, de télécommunication.

CISS (2010). Démographie médicale, répartition des médecins sur le territoire. Enjeux pour l'accès aux soins et la sécurité des usagers. Cahiers; 1. Paris : Collectif Interassociatif Sur la Santé: 43 +annexes.

L'enquête réalisée par le CISS, la FNATH et l'UNAF a consisté, cette année, à rassembler le plus grand nombre d'éléments disponibles sur la démographie médicale, la répartition des médecins sur le territoire, l'évolution prévisible de ces installations et a également porté sur les aides à l'installation et au maintien mises en place par l'assurance maladie en direction des médecins afin de les inciter à s'installer ou à se maintenir sur les zones réputées « sous denses » par les ex-Missions régionales de santé. Les données exploitées dans ce dossier proviennent à la fois de celles qui ont fait l'objet d'une publication, en 2010, du Conseil national de l'ordre des Médecins, sous la forme d'atlas régionaux, et de celles qui nous ont été transmises par la cinquantaine de CPAM (sur cent) qui ont donné suite aux requêtes formulées par nos représentants présents au sein de leurs conseils. Le CISS, la FNATH et l'Unaf souhaitent ainsi exprimer les inquiétudes des usagers qui, pour nombre d'entre eux, sont confrontés au péril de l'éloignement de la médecine de premier recours. (Extrait de la synthèse).

Cnamts (2012). Rapport de l'assurance maladie sur les charges et produits pour l'année 2013. Paris Cnamts: 90 +111

Cette publication en deux volumes constitue le rapport annuel de la Cnamts sur les charges et produits pour l'année 2013 et identifie plusieurs gisements d'économies pour les dépenses de santé. Elle souligne des marges de progrès, en termes de qualité mais aussi de rapport coût/qualité, pour des processus de soins particuliers, dans les secteurs de la chirurgie programmée, du diabète, des cancers de la prostate et colorectal, de l'insuffisance cardiaque. La Cnamts met également en avant des progrès possibles dans les domaines de l'organisation et de l'utilisation des ressources, des comportements de recours aux soins des patients et des pratiques des professionnels, et de la régulation des prix (génériques).

CNOM. (2009). La télémédecine. Les préconisations de l'Ordre national des médecins. Paris CNOM: 21 , annexes.

L'histoire de la médecine démontre que, à toute époque, les médecins ont incorporé dans leurs pratiques les innovations technologiques, afin d'améliorer l'exercice de leur art au service de la qualité des soins et de la prise en charge des patients. La diffusion de ces technologies a toujours conduit à de nouvelles façons d'exercer la médecine. La télémédecine, qui n'est que l'application des technologies de l'information et de la communication (TIC) à l'exercice de la médecine, apparaît donc aujourd'hui comme l'un des moyens de faire face à de nouveaux besoins. Faire face aux défis qui doivent désormais être relevés par notre système de santé, contribuer à une amélioration d'un accès

équitable aux soins, à leur coordination, à leur qualité en termes d'expertise, au maintien dans leur lieu de vie et en autonomie de patients âgés ou atteints de pathologies chroniques. Sous ce double aspect, le développement de l'utilisation des TIC dans le domaine de la santé jouera à la fois sur les pratiques médicales et sur l'organisation du système de soins. C'est la raison pour laquelle le Conseil national de l'ordre des médecins développe dans ce Livre Blanc son analyse de ce nouveau mode de pratique et, plus encore, les conditions nécessaires pour garantir la qualité de la médecine et le respect des droits des patients, ce qui est le propre de la déontologie médicale qu'il a la charge de faire respecter. À cet égard, le Conseil national de l'ordre des médecins souligne d'emblée que les nouvelles technologies ne sont que des outils supplémentaires au service de la médecine qui est elle-même au service des malades. Tout en considérant la télémédecine comme l'un des moyens de faire face aux défis posés à notre système de santé, l'Ordre souligne que sa mise en œuvre doit être exclusivement guidée par des besoins et une nécessité justifiés. La pratique de la télémédecine ne saurait venir contribuer à une déshumanisation de la relation avec le patient. Aucune technologie ne peut venir remplacer la relation humaine, interpersonnelle et singulière qui doit rester le fondement même de l'exercice de la médecine. C'est pourquoi, aux yeux de l'Ordre, la place de la télémédecine dans notre système de santé doit être définie en étroite concertation avec les médecins et les autres professionnels de santé, avec le concours des patients et de leurs représentants. Cette concertation doit s'élargir vers les industriels spécialisés et les organisations qui les représentent afin de vérifier l'adéquation et la fiabilité des dispositifs envisagés avec l'état de l'art technologique.

CNOM (2014). Vademecum télémédecine. Paris Conseil National de l'Ordre des médecins: 21.

Ce Vade-mécum constitue un guide commenté sur les aspects juridiques et déontologiques à respecter lors de la construction des projets de télémédecine et dans sa pratique. Il comporte deux parties : L'analyse du CNOM pour l'application pratique du cadre réglementaire, afin de constituer une base de doctrine déontologique pour l'examen des contrats de Télémédecine prévus par le décret; La position du CNOM sur des prestations médicales qui se situent aux confins du cadre réglementaire et que le CNOM estime nécessaire de réguler.

CNOM (2016). Télémédecine et autres prestations médicales électroniques. Paris Conseil National de l'Ordre des médecins: 15.

<https://www.conseil-national.medecin.fr/node/1692>

Le CNOM constate qu'au terme de la Grande consultation qu'il a conduite, 70% des médecins indiquent la nécessité d'intégrer le numérique dans l'organisation des soins sur les territoires. En revanche les innovations technologiques ne doivent pas conduire à l'ubérisation des prestations médicales. Le CNOM demande donc à la fois : - une simplification de la réglementation de la télémédecine pour qu'elle soit intégrée concrètement dans les parcours de soins des patients et les pratiques quotidiennes des médecins, l'instauration d'une régulation des offres numériques en santé, dans le respect de principes éthiques et déontologiques dans le champ sanitaire.

Cosquer, P. et Guezou, T. (2005). "Système Séréo'z développé par la société Aphycare Technologies." Gérontologie Et Société(113): 83-96, fig.

[BDSP. Notice produite par FNG O95CR0xO. Diffusion soumise à autorisation]. La gamme Séréo'z a été spécialement développée par Aphycare Technologies pour répondre aux besoins liés à la sécurisation des personnes en institution et à domicile. Le bracelet assure une surveillance automatique 24h/24. Il détecte des anomalies : chutes ou chocs violents ; paramètres vitaux (pouls et température cutanée). Le système est disponible aussi bien à domicile que pour les institutions.

Cour des Comptes (2017). La télémédecine : une stratégie cohérente à mettre en œuvre. Sécurité sociale : Rapport 2017 sur l'application des lois de financement de la sécurité sociale., Paris : Cour des Comptes: 297-. https://www.ccomptes.fr/sites/default/files/2017-09/20170920-rapport-securite-sociale-2017_1.pdf

À l'occasion de plusieurs de ses travaux récents, portant notamment sur la santé des personnes détenues, la santé dans les outre-mer, l'hospitalisation à domicile et l'imagerie médicale, la Cour avait relevé l'atout que pourrait représenter la télémédecine pour certains segments de l'offre de soins Elle

a cherché à apprécier plus complètement par une enquête spécifique l'adéquation de l'action conduite par les pouvoirs publics aux enjeux et conditions du développement de la télémédecine. La télémédecine constitue en effet un levier potentiellement majeur de modernisation de système de santé français. Le caractère fragmentaire et désordonné des actions menées par les pouvoirs publics en maintient cependant le développement à un stade embryonnaire. Une stratégie d'ensemble cohérente, qui achève de lever les préalables techniques et juridiques et mette en place un cadre tarifaire adapté à son expansion, est indispensable à la concrétisation de ses apports à l'efficacité des soins.

Croels, J. M. (2006). Le droit des obligations à l'épreuve de la télémédecine., Marseille : Presses Universitaires d'Aix-Marseille

https://books.google.fr/books/about/Le_droit_des_obligations_%C3%A0_l_%C3%A9preuve_d.html?id=0RvfXwAACAAJ&redir_esc=y&hl=fr

La télémédecine médicale permet à plusieurs professionnels de santé de communiquer pour favoriser la prise en charge d'un patient dans le cadre d'un diagnostic ou d'une thérapie. Elle recouvre les activités de télé-diagnostic, de télé-encadrement, de télé-staffs, de télésurveillance et de télé-chirurgie. Ces pratiques permettent de rationaliser le découpage de la carte sanitaire et sociale française et d'assurer, à un moindre coût, une médecine de qualité grâce à un accès distant à des avis spécialisés. Bouleversant la pratique de la médecine, cette activité peut être à la source de nombreux conflits et de difficultés pratiques et juridiques. La responsabilité des acteurs de la télémédecine (médecins, établissements de santé promoteurs et tiers technologiques) présente un certain nombre de spécificités. Elles sont induites par l'originalité des activités pratiquées et par le cadre juridique élaboré pour organiser et conduire les actes médicaux à distance. Pour l'heure, la télémédecine souffre d'un réel déficit de qualification juridique. Or c'est un élément essentiel de la détermination du régime de responsabilité applicable. Ainsi, confronter la pratique de la télémédecine au droit des obligations permet d'une part, d'orienter ses réflexions utiles à la constitution des réseaux et à la résolution des conflits. Elle se révélera, d'autre part, importante pour élaborer des règles juridiques et déontologiques qui devront être mises en place dans l'avenir.

Dantoine, T. (2017). "Prévenir l'hospitalisation des résidents d'EHPAD : Le dispositif de télémédecine géronto-préventive." Revue Hospitalière De France(574): 27-.

[BDSP. Notice produite par EHESP HR0xl7F9. Diffusion soumise à autorisation]. Conçu par le CHU de Limoges, le projet de télémédecine géronto-préventive est déployé par le pôle d'excellence rurale de la vallée de la Gorre (Haute-Vienne). Le territoire le plus "âgé" de France compte de nombreux patients polyopathologiques de plus de 75 ans, à l'autonomie compromise. Il souffre aussi d'une forte désertification médicale. (R.A.).

Darracq, J.-P. et Blanchard, S. (2011). "Dispositif de soins. Télésanté en prison." Gestions Hospitalières(506): 334-335.

[BDSP. Notice produite par EHESP j8tsqR0x. Diffusion soumise à autorisation]. Présentation du projet 'Télésanté en prison' développé dans les trois unités de consultations et de soins ambulatoires (Ucsa) de la Dordogne et dans leurs centres hospitaliers de référence sur le plan somatique et psychiatrique. Ce projet, qui s'est appuyé sur la plateforme Télésanté Aquitaine, a permis d'informatiser certaines fonctions et de faciliter les échanges d'informations, confidentielles, de manière sécurisée, entre professionnels de santé.

Daudelin, G., et al. (2008). "La recomposition des patients et des pratiques médicales en télé néphrologie. Les présences décalées." Sciences Sociales Et Sante 26(3): 81-104.

La télémédecine apparaît comme un moyen séduisant de rendre présents les uns aux autres, patients et spécialistes. Toutefois, si les acteurs peuvent mobiliser les technologies dans des projets cliniques spécifiques, les technologies leur imposent leurs propres possibilités et limites et, ce faisant, agissent sur eux, recomposant les pratiques médicales d'une manière potentiellement problématique. La reconstitution des patients et des pratiques médicales par les technologies de l'information et de

communication est au centre de l'analyse d'un cas de télé néphrologie. Elle montre comment l'introduction de technologies peut être lourde de possibles, parfois incompatibles avec les projets de ses acteurs, ce qui pourrait expliquer la sous-utilisation de ces technologies.

D'Audiffret, D. (2009). Optimisation de la prise en charge à domicile en France. Quelles propositions ?, Paris : Alcedim Technologies

L'objectif principal de cette étude est d'émettre des propositions opérationnelles pour optimiser la prise en charge à domicile en France ciblées sur les personnes atteintes de maladies chroniques et les personnes âgées dépendantes. L'ambition est d'apporter les éléments pour constituer une nouvelle ingénierie du système de prise en charge à domicile avec des outils et des indicateurs (tiré de l'introduction).

De Goer, B., et al. (2011). "Télémédecine entre hôpital et centre pénitentiaire. Mise en œuvre et premier bilan à Aiton (73)." Techniques Hospitalières(725): 18-21.

[BDSP. Notice produite par EHESP R0xJ88pA. Diffusion soumise à autorisation]. Le centre pénitentiaire d'Aiton comprend une maison d'arrêt et un centre de détention, situé à 45km du centre hospitalier de Chambéry. Afin de limiter les extractions qui comportent un risque sécuritaire et un coût financier important, un projet de télé médecine a été développé entre l'Unité de consultation et de soins ambulatoires (UCSA) du centre pénitentiaire d'Aiton et le centre hospitalier de Chambéry. Cet article dresse un premier bilan des téléconsultations mises en place depuis 2009 dans le cadre de ce projet.

De Haas, P. (2015). Monter et faire vivre une maison de santé, Brignais : Le coudrier éditions

<http://www.edition->

[lecoudrier.fr/produit/5/9782919374052/Monter%20et%20faire%20vivre%20une%20maison%20de%20sante](http://www.edition-lecoudrier.fr/produit/5/9782919374052/Monter%20et%20faire%20vivre%20une%20maison%20de%20sante)

Mode d'exercice attrayant pour les libéraux, les maisons de santé pallient les difficultés d'accès aux soins dans les zones où les soignants se raréfient, tout en permettant d'améliorer la continuité et la qualité des soins en ambulatoire. Pour autant, mener à bien de tels projets se révèle complexe. Dans cet ouvrage, l'auteur décortique le mécanisme de la construction d'une maison de santé à partir de quatre expériences récentes. Après une présentation des parties prenantes, il détaille les six briques porteuses de l'édifice : approche territoriale, dynamique d'équipe, montage juridique, financement, immobilier, projet de santé et projet professionnel. Il développe ensuite toutes les facettes du fonctionnement de la structure et trace les perspectives de ce mode d'exercice (4ème de couv.)

De Montalembert, P. (2016). "Mission Groupements Hospitaliers de Territoire : rapport de fin de mission." Gestions Hospitalières(554): 154-159, tabl.

[BDSP. Notice produite par EHESP 9IECR0x9. Diffusion soumise à autorisation]. Le 16 mars 2015, Jacqueline Hubert, directrice générale du CHU de Grenoble, et le Dr Frédéric Martineau, président de la Conférence des présidents de CME de CH, ont rendu le second rapport sur le déploiement des groupements hospitaliers de territoire (GHT). Ce second rapport vise à formuler des préconisations sur le dispositif cible des GHT, en identifiant les points de vigilance. D'emblée, les auteurs font part de leur conviction qu'il faut "laisser la plus grande souplesse aux acteurs en responsabilité et leur accorder toute confiance". (introd.).

Debertrand, N. (2014). "[Digital territory project]." Soins(790): 7.

Delibie, M. (2016). "Soins des personnes âgées en milieu rural : Quelle médecine ?" Revue Hospitalière De France(573): 27-28.

[BDSP. Notice produite par EHESP rR0xEkqA. Diffusion soumise à autorisation]. Au sud de la Dordogne, dans un territoire rural situé à équidistance de Bordeaux, Angoulême et Périgueux (une heure de route), la télé médecine apporte une réponse pertinente à deux problèmes : la désertification médicale et l'isolement des personnes âgées, tentées par le renoncement aux soins. (R.A.).

Depinoy, D. (2011). Maisons de santé, une urgence citoyenne, Paris : Editions de santé

Le système de santé est en plein changement et les défis liés aux évolutions démographiques, comportementales, épidémiologiques et des pratiques médicales imposent une nouvelle organisation. La structuration du premier niveau des soins - appelé le premier recours - peut apporter des résultats concrets rapides en matière de réduction des inégalités, d'amélioration de la qualité du service rendu et d'efficacité. S'attacher de manière volontariste à soutenir l'émergence des modes d'exercice pluriprofessionnels et regroupés peut permettre de relever les enjeux majeurs de notre système de santé. Au-delà d'un effet de mode qui pousse à vouloir construire rapidement des maisons de santé, il y a matière à soutenir également d'autres formes de regroupement pluriprofessionnel pour constituer le socle d'une nouvelle médecine de premier recours. Il est nécessaire d'accompagner le changement pour donner une chance à ces nouvelles formes d'exercice en équipe mais aussi et surtout de faire preuve d'audace pour mener ces expériences à l'échelon national. Cet ouvrage détaille les enjeux de l'organisation du premier recours et propose des leviers de réussite des projets. Il s'adresse à tous les professionnels de santé qui désirent se lancer dans un projet de maison ou pôle de santé mais aussi aux élus et aux institutionnels qui ont besoin de clefs pour participer.

Descours, C. (2003). Propositions en vue d'améliorer la répartition des professionnels de santé sur le territoire. Paris MSSPS: 40 , ann.

<http://www.ladocumentationfrancaise.fr/rapports-publics/034000383/index.shtml>

Les perspectives démographiques des professionnels de santé font dès à présent apparaître un vieillissement et une diminution des effectifs avec, en filigrane, l'apparition de phénomènes de pénurie sur certains territoires, si aucune mesure n'était prise. Cette relative désertification, qui peut déjà être constatée notamment dans certaines zones rurales et périurbaines, s'inscrit dans une évolution plus générale de la société et de la place que les professionnels de santé y occupent. Ce rapport dresse d'abord un état des lieux de la répartition des professionnels de santé sur le territoire français, puis analyse les raisons de cette inégale répartition. Il propose ensuite une panoplie de mesures incitatives s'adaptant à la diversité des situations locales.

Deshayes, J. L. et Philippe, H. J. (2000). "Internet use for telemedicine : fetal medicine applications." Journal De Radiologie(81): 441-444.

Dumoulin, L. (2008). ""Parlez dans le visiophone !" La distance dans l'exercice des activités médicales et judiciaires. Commentaire." Sciences Sociales Et Sante 26(3): 107-114.

Durupt, M., et al. (2016). "La télémédecine en zones rurales : représentations et expériences de médecins généralistes." Sante Publique 28(4): 487-497.

[BDSP. Notice produite par EHESP tABROxmk. Diffusion soumise à autorisation]. Introduction : La télémédecine constitue une nouvelle forme de pratique médicale dont le développement est aujourd'hui en pleine expansion. Elle trouve un écho particulier dans certains territoires lorrains où le déficit en médecins généralistes et spécialistes nécessite le développement de nouvelles formes de pratiques. L'objectif de cette étude était d'explorer les représentations de la télémédecine, et de la téléconsultation en particulier, des médecins généralistes exerçant en zones déficitaires en offre de soins en Lorraine et d'identifier les avantages et désavantages perçus de son développement. Méthodes : Une analyse qualitative a été faite à partir de cinq focus groupes réalisés avec 32 médecins entre juin 2014 et juillet 2015 dans un territoire à faible densité médicale. Résultats : Cette étude montre qu'il existe une méconnaissance générale de la télémédecine. Les médecins expriment leur désir de préserver leur rôle de pivot et d'être acteurs de cette télémédecine qui ne devra pas leur être imposée. Les réticences en termes d'aspects juridiques et financiers sont des freins à son développement. Enfin, la télémédecine devra respecter un cadre légal en termes de responsabilité médicale et de sécurisation des données. Discussion : Chaque mois, plus de cent actes de télémédecine sont réalisés en Lorraine. Bien qu'il s'agisse d'une solution permettant de faciliter l'accès aux soins dans les zones déficitaires, les médecins semblent vouloir préserver leur relation médecin-patient et ne se sentent pas prêts à modifier leur pratique.

Escano, G. (2007). "La difficile évaluation des réseaux de santé - Bilan et perspectives 8 ans après les ordonnances "Juppé". " Notes Et Documents(47): 107.

L'auteur de ce document fait le point sur le concept et les finalités des réseaux de santé avec, au cœur du système de soins, un patient qui n'est pas nécessairement un malade car le système de santé intègre l'éducation sanitaire et la prévention. Ensuite, l'auteur replace les réseaux dans les cadres légaux et réglementaires des "ordonnances Juppé" à la loi "Kouchner" relative aux droits des malades et à la qualité du système de santé en passant par les lois de financement de la sécurité sociale. Il expose également d'autres modalités d'organisation innovante avec l'hospitalisation à domicile, les maisons médicales, les agents de santé, la valorisation du rôle du médecin généraliste.

Espinoza, P. (2010). "Territoires de santé et télémédecine. Les facteurs clés du déploiement." Revue Hospitalière De France(533): 40-42.

[BDSP. Notice produite par EHESP JEROxFnt. Diffusion soumise à autorisation]. L'expérience de cinq ans de télémédecine et plus de 600 consultations spécialisées à distance ont conduit les praticiens hospitaliers du Pôle urgence de l'hôpital européen Georges Pompidou, à évoquer les facteurs clés du déploiement. Cet article a pour objet d'ouvrir un débat. Les deux projets qui ont été conduit : Télégéria ADSL ou 3G et Télégéria haute définition ou CiscoHealthPresence ont permis de comprendre les enjeux sur les réseaux informatiques, sur les outils, les pratiques et d'identifier le rôle clé des acteurs sur le terrain. Les questions que soulève le déploiement sont multiples : quelles difficultés, quels enjeux, quels processus à mettre en œuvre dans la conduite de projets ? Quelle hiérarchie entre les enjeux technologiques, scientifiques, juridiques, organisationnels et médico-économiques ? Une manière de répondre est d'aborder ces questions sous un angle opérationnel : comment organiser les nouvelles pratiques, les nouveaux métiers, la valorisation de l'activité, les nouvelles organisations ?

Espinoza, P., et al. (2011). "Déploiement de la télémédecine en territoire de santé : Télégéria, un modèle expérimental précurseur." Techniques Hospitalières(725): 9-17, fig.

[BDSP. Notice produite par EHESP BIR0xmon. Diffusion soumise à autorisation]. Mis en place dans le cadre de l'Assistance publique-Hôpitaux de Paris (AP-HP), Télégéria est un réseau de télémédecine réunissant des établissements de santé pour personnes âgées en liaison avec des hôpitaux de court séjour MCO (médecine, chirurgie, obstétrique). Cet article décrit le projet mis en place dans le cadre de Télégéria entre l'Hôpital européen Georges-Pompidou (HEGP) et l'hôpital gériatrique Vaugirard Gabriel-Pallez, projet qui a permis de réaliser environ 700 sessions de télémédecine en quinze mois concernant plusieurs spécialités : orthopédie, échographie cardiaque et vasculaire, dermatologie, cardiovasculaire, hématologie.

Espinoza, P. et Lebourgeois, F. (2010). "Télégéria, de l'ADSL à la haute définition : réflexions et propositions pour l'aménagement des territoires de santé." Revue Hospitalière De France(532): 43-46.

[BDSP. Notice produite par EHESP IROxAI98. Diffusion soumise à autorisation]. L'article présente le réseau de télémédecine Télégéria, qui réalise des consultations spécialisées à distance, sur un réseau sécurisé, entre hôpitaux et établissements hébergeant des personnes âgées dépendantes. L'expérimentation permet de dégager des conclusions sur la mise en œuvre technique, sur les perspectives d'utilisations cliniques, sur la prise en compte de l'aspect éthique et organisationnel.

Esterle, L., et al. (2011). "L'impact des consultations à distance sur les pratiques médicales : vers un nouveau métier de médecin." Revue Française Des Affaires Sociales(2-3): 65-80.

[BDSP. Notice produite par MIN-SANTE 7CR0xJoB. Diffusion soumise à autorisation]. La télémédecine est encouragée en France pour répondre aux enjeux actuels de santé : démographie médicale, vieillissement de la population, égalité d'accès aux soins. Au-delà des problèmes techniques, déontologiques et financiers qu'elle peut poser, la télémédecine n'est pas sans conséquences sur l'organisation des soins et la pratique médicale. L'observation de téléconsultations menées entre un hôpital de gériatrie et un centre hospitalier universitaire, grâce à un dispositif de téléprésence, a

permis d'étudier les impacts de son usage sur les pratiques professionnelles et les relations entre professionnels de santé. Elle révèle, notamment, que la mise en place d'un tel dispositif, son développement et son utilisation pérenne nécessitent de recourir à de nouvelles compétences, qui pourraient être celles d'un médecin coordonnateur en télé-médecine.

Faure, H. et Rossignol, G. (1999). "La télé-médecine en France." *Technologie Et Sante*(36): 34-40.

La télé-matique de santé est une des applications des nouvelles technologies qui désigne les activités, les services et systèmes liés à la santé, pratiqués à distance au moyen des technologies de l'information et des communications. La télé-médecine est une des composantes de la télé-matique de santé dont les expériences se multiplient pour mieux servir les institutionnels et le particulier : liaisons avec le patient à domicile, les professionnels de la santé, les établissements de soins et de recherche. Dès lors deux visions différentes de la télé-médecine s'expriment, l'une tirée par des intérêts financiers et commerciaux, l'autre imprégnée de la notion de service public, plus orientée vers les acteurs de la santé et l'amélioration des soins. L'article détaille les différentes actions entreprises par l'Etat, depuis l'enquête « cartographie » réalisée en 1997, jusqu'aux initiatives visant l'aménagement du territoire, puis tire des conclusions en termes de perspectives pour l'avenir.

Faure, V., et al. (2016). "Des mesures physiologiques automatisées aux urgences." *Gestions Hospitalières*(561): 637-640, fig.

[BDSP. Notice produite par EHESP H9kR0x9o. Diffusion soumise à autorisation]. L'organisation de la prise en charge des patients dans un service d'accueil des urgences est une priorité au regard de l'augmentation du nombre de passages dans ce type de structure. Afin d'optimiser cette organisation, les auteurs ont évalué l'apport d'un dispositif d'automates à l'aide d'une cabine de télésanté, dispositif qui complète le dispositif de triage par l'infirmière d'accueil et participe à la régulation des flux dans le cadre d'un parcours de soins spécifique.

Ferraud-Ciandet, N. (2011). *Droit de la télésanté et de la télé-médecine : à jour du décret du 19 décembre sur la télé-médecine*, Paris : Editions Heures de France
http://www.lgdj.fr/guides-pratiques/2335328/droit-telesante-telemedecine?_IDPrv=ID00022

Les applications de télésanté s'étendent chaque jour et incluent notamment : la gestion des données de santé, la prescription en ligne, la télé-médecine, la télé-assistance, la télé-chirurgie. Cet ouvrage rassemble des conseils qui permettront de passer des intentions aux actes et de développer ainsi un système de santé basé sur les nouvelles technologies de l'information et de la communication (NTIC). Avec l'appui du gouvernement, l'infrastructure des données de santé, le soutien de l'Agence des systèmes d'information de santé (ASIP Santé) et le lancement d'appels à projets dans le cadre du grand emprunt, la télésanté émerge rapidement comme l'un des secteurs les plus dynamiques de l'industrie des soins de santé. Cette industrie fortement réglementée, de plus en plus dépendante des NTIC, confronte les professionnels à des questions juridiques nouvelles. Centré sur la protection des applications de télésanté et la responsabilité médicale, ce livre s'adresse à la fois aux industriels du secteur et aux professionnels de santé. Les premiers y trouveront des orientations concernant la conception et l'exploitation des produits et services de télésanté. Les seconds percevront comment la télésanté s'inscrit dans leur pratique, qu'elle soit libérale, salariée ou au sein du service public hospitalier, et les responsabilités encourues (4e de couverture).

Finet, P. (2012). "Télésanté : exemples de réalisations dans l'Orne." *Techniques Hospitalières*(733): 52-57, fig.

[BDSP. Notice produite par EHESP o9DB8R0x. Diffusion soumise à autorisation]. Cet article présente deux projets de recours à la télé-médecine développés dans le département de l'Orne. Il s'agit de la mise en place d'un système de télé-transmission de l'examen ECG (électrocardiogramme) lors des interventions Smur "primaires" et de la mise en œuvre d'un système de télé-consultation et télé-expertise au sein de l'unité de consultations et de soins ambulatoires (UCSA) d'une prison de haute sécurité près d'Alençon.

Fisch, S. (2014). "Télémédecine : une politique publique au service d'une révolution dans l'offre de soins." Actualité Et Dossier En Sante Publique(89): 9-11.

[BDSP. Notice produite par EHESP q79mR0xs. Diffusion soumise à autorisation]. Le développement de la télémédecine dans l'offre de soins français est porteur de beaucoup d'espoirs, tant au niveau de la qualité, de l'accessibilité, que de l'efficacité de notre système de santé.

Flahault, A. (2011). "Télémédecine, faux nez des carences d'un système de soins." Cahiers De Sante Publique Et De Protection Sociale (Les): 19.

Cet article commente les résultats d'une revue systématique des études publiées sur l'impact de la télémédecine dans les unités de soins intensifs.

Fontaine, M., et al. (2005). "Périnatalité." Technologie Et Sante(57): 100 , tabl., fig.

[BDSP. Notice produite par AHPDOC R0xLCmeC. Diffusion soumise à autorisation]. Ce numéro consacré à la périnatalité est composé en trois grandes parties : la première partie porte sur le suivi de la grossesse : procréation médicalement assistée et diagnostic préimplantatoire ; les nouvelles techniques de monitoring de la grossesse et de l'accouchement ; la prévention de la prématurité ; le transfert in utero. La deuxième partie porte sur les soins postnatals : le réchauffement du nouveau-né ; la ventilation néonatale ; le traitement des détresses respiratoires par le monoxyde d'azote ; le dépistage néonatal ; l'imagerie pédiatrique ; l'installation et le confort du nouveau-né ; le pronostic de la grande prématurité et le suivi des nouveaux-nés ; la sortie précoce de maternité et le suivi postnatal. La troisième partie traite de l'organisation de la prise en charge du nouveau-né, et notamment de la place donnée aux familles dans les services de néonatalogie.

Fournereau, F. et Tandy, L. (2013). "La télé-imagerie : un atout majeur pour la prise en charge des AVC." Gestions Hospitalières(526): 293-295, graph.

[BDSP. Notice produite par EHESP pJnR0xBr. Diffusion soumise à autorisation]. Améliorer l'offre de soins, en utilisant au mieux la ressource médicale, c'est l'objectif posé par les professionnels de santé, le ministère de la Santé et les agences régionales de santé (ARS). L'auteur décrit ici l'utilisation de la télé-imagerie dans la prise en charge des accidents vasculaires cérébraux (AVC), un outil appelé à favoriser l'accessibilité aux soins.

Fournereau, F. et Tandy, L. (2014). "La télé-imagerie : un atout majeur pour la prise en charge des AVC." Gestions Hospitalières(535): 204-206, graph.

[BDSP. Notice produite par EHESP qR0xJFI7. Diffusion soumise à autorisation]. Améliorer l'offre de soins, en utilisant au mieux la ressource médicale, c'est l'objectif posé par les professionnels de santé, le ministère de la Santé et les agences régionales de santé (ARS). L'auteur décrit ici l'utilisation de la télé-imagerie dans la prise en charge de accidents vasculaires cérébraux (AVC), un outil appelé à favoriser l'accessibilité aux soins.

Franco, A., et al. (2003). "Gérontechnologies, âge et handicap." Revue Hospitalière De France(491): 28-35.

[BDSP. Notice produite par ENSP WqR0xAo0. Diffusion soumise à autorisation]. Sommaire de l'intervention, le matin : Introduction : Les enjeux de la gérontechnologie Bien vieillir à domicile, habitat service : - Nouvelles technologies et domicile, les enjeux.. - De la télésurveillance à la plateforme multiservice. - Age d'or services : de l'accompagnement dans les déplacements à la demande de coordination des autres services. Réseau informatique et CLIC : - Réseau informatique et centres locaux d'information et de coordination. - Point de vue d'un opérateur. - Point de vue d'un fournisseur de logiciels. Sommaire intervention de après-midi : Technologies de l'information au service des soins gériatriques : - Information des structures gériatriques. - La prescription médicale informatisée. - Télésurveillance à domicile et soutien intergénération. - Télémédecine en hospitalisation à domicile : VISADOM. - Liberté "à la carte" pour les personnes sujettes à l'errance. - Actimétrie. - Attentes et réalisations au centre hospitalier d'Embrun. Partage des connaissances et technologies : -

Développement de la formation gérontechnologie. - Le potentiel de l'université virtuelle et son application à la formation gérontechnologique et gériatrique des communautés d'usagers. Cet article reprend le résumé de certaines de ces interventions.

Franzin-Garrec, M. et Hoden, R. (2016). "[Quality of care and risk management in hospital at home services]." Soins(804): 47-48.

Hospital at home structures are healthcare institutions in their own right, with the same obligations in terms of governance with regard to quality of care and risk management. However, hospital at home services are characterised by the remote management of the activity and the nursing staff, with specific constraints.

Gagnon, M. P., et al. (2001). "La télémédecine au service des régions : étude évaluative d'un projet de télésanté aux Iles-de-la-Madeleine." Ruptures : Revue Transdisciplinaire En Sante 8(2): 53-70, graph.

La télémédecine au service des régions visait la conception et la mise à l'essai d'un réseau de télésanté afin de répondre aux besoins de la population des Iles-de-la-Madeleine. La démarche d'évaluation employée dans le cadre de ce projet ainsi que les principaux constats qui se dégagent de l'expérimentation évaluée au regard de la mise en œuvre et du déroulement du projet, de l'utilisation de la télésanté et de ses effets sont présentés dans cet article. La pertinence d'une démarche d'évaluation intégrée à un projet d'introduction d'une nouvelle technologie comme la télésanté ressort clairement de l'expérience rapportée, où l'évaluation a identifié plusieurs des conditions associées au contexte, aux organisations et acteurs permettant de favoriser la pérennité du projet et la diffusion de cette technologie dans le système de services de santé.

Gallin, X. (2000). "La télémédecine en pratique aujourd'hui." Décision Sante(168): 24-26.

[BDSP. Notice produite par ENSP kYqR0xT6. Diffusion soumise à autorisation]. La télémédecine s'est fortement développée ces dernières années, notamment grâce aux progrès des télécommunications et à l'essor de la technologie des réseaux. Deux récentes manifestations sont venues témoigner de cette évolution, les journées de l'ADEMA (Agence de Développement Économique du Mans) et le colloque Télémédecine 2000 du CATEL. L'occasion de faire le point sur la "nouvelle médecine".

Gallois, F. et Rauly, A. (2016). "De la caractérisation à la comparaison des systèmes de télémédecine : implications méthodologiques." Journal De Gestion Et D'économie Médicales 34(1): 87-105, tabl., graph.

[BDSP. Notice produite par ORSRA qR0xlqjA. Diffusion soumise à autorisation]. La télémédecine en tant que pratique de la médecine à distance, via les technologies de l'information et de la communication, est plébiscitée par les organisations de coopération internationale que sont l'OMS et l'OCDE. La télémédecine est alors présentée comme un moyen d'améliorer l'efficacité et la performance des systèmes de santé de leurs pays membres, indépendamment de la configuration du système. Pourtant, aucun de ces organismes ne caractérise précisément la télémédecine au regard de la place qu'elle occupe au sein du système de santé. Nous proposons de présenter une méthodologie de caractérisation d'un système de télémédecine, à même mettre en relation production de télémédecine et configuration institutionnelle, en vue de soutenir une comparaison internationale.

Garcia, E. (2001). "Mise en place d'un réseau Télémédecine : enseignements et pistes de travail." Journal D'économie Médicale 19(5-6): 391-400, rés.

[BDSP. Notice produite par ORSRA NR0xaXVc. Diffusion soumise à autorisation]. L'objet de ce papier est de présenter un cas pratique de réalisation d'un projet à partir de la mise en place d'un réseau Télémédecine entre la ville et l'hôpital. Ce projet, ayant pour finalité l'instauration d'un système de communication reposant sur les nouvelles technologies de l'information et de la communication, sera approché par l'intermédiaire de ses objectifs, ses ressources, ses activités avant d'en mesurer les résultats obtenus sur le terrain, les difficultés rencontrées et les pistes de travail qui se dessinent aujourd'hui pour sa pérennisation et son développement. (R.A.).

Gay del Santo, J. (2011). "Lozère : organiser et renforcer les soins de premier recours en milieu rural." Réseaux Sante & Territoire(36): 24-28, carte.

Enclavée en zone de moyenne montagne, éloignée des pôles urbains, la Lozère présente toutes les problématiques des territoires ruraux : désertification médicale, isolement des médecins, délais d'intervention relativement longs des urgences. L'Association lozérienne des urgences médicales et de la permanence de soins (Alumps), par l'intermédiaire de son chargé de mission Laurent Crozat, s'est emparée de ces questions afin d'y apporter une réponse globale en accompagnant les professionnels de santé pour le développement de la télémédecine et de la formation.

Gimbert, V. et Lemoine, S. (2010). "Médecine de ville : quelles nouvelles pratiques pour quels gains d'efficience ?" Note D'analyse (La)(204): 11.

<http://archives.strategie.gouv.fr/cas/content/note-d%E2%80%99analyse-n%C2%B0-204-medecine-de-ville-queelles-nouvelles-pratiques-pour-quels-gains-d%E2%80%99effic.html>

Dans un contexte marqué par l'importance croissante des maladies chroniques, par la modification des attentes des patients et des nouvelles générations de médecins, et par des tensions accrues sur les finances sociales, la régulation des dépenses en médecine de ville est au cœur des enjeux. Elle implique avant tout un encadrement équilibré des pratiques des professionnels de santé. Par ailleurs, on constate que l'assurance maladie se positionne de plus en plus comme un accompagnateur pour le professionnel de santé, mais aussi pour le patient. Cela pose la question des modalités de coopération optimales entre assureurs (public et privé) et professionnels. Enfin, la réorganisation de l'offre de soins elle-même peut permettre d'accroître l'efficience globale des dépenses de santé, comme en témoignent plusieurs expérimentations à l'étranger. Il conviendrait alors d'examiner dans quelle mesure elles peuvent nourrir les réflexions sur l'avenir du système français en matière de médecine de ville.

Giraudeau, N. et Lucato, S. (2016). "Télémédecine bucco-dentaire et exercice infirmier sous protocole de coopération : Le projet e-Dent en Ehpad." Revue Hospitalière De France(569): 57-59.

[BDSP. Notice produite par EHESP 9rqR0xkm. Diffusion soumise à autorisation]. Retour sur une activité innovante conduite entre les Ehpad du centre hospitalier d'Uzès et le CHU de Montpellier : la téléconsultation bucco-dentaire e-Dent. Les téléconsultations réalisées à ce jour ont mis en évidence le rôle central de l'infirmier "téléodonto-référent" dans cette activité.

Goli, D. (2006). "Les maux de la nuit : témoignage d'une personne aidée." Gérontologie Et Société(116): 183-185.

[BDSP. Notice produite par FNG R0xQfid0. Diffusion soumise à autorisation]. Le handicap, c'est un combat au quotidien. Ce dernier peut cependant être atténué grâce à une prise en charge efficace. La nuit touche la personne handicapée au cœur de sa vulnérabilité. Par exemple, la personne ayant des déficiences motrices angoissera de devoir aller aux toilettes et de faire une chute alors qu'elle est seule. Comment fera celle souffrant de maladie respiratoire, si personne n'est là pour changer les canules de son appareil de ventilation ? Pour que la personne se sente un peu moins handicapée, il faudrait multiplier les interventions nocturnes d'auxiliaires de vie et de personnels de santé, développer la télésurveillance et la domotique ainsi que tous les systèmes concourant à améliorer l'indépendance du patient. (R.A.).

Gondry, J. et Marque, C. (2005). "Les nouvelles techniques de monitoring de la grossesse et de l'accouchement." Technologie Et Sante(57): 19-27, fig.

[BDSP. Notice produite par APHPDOC dkR0xYNw. Diffusion soumise à autorisation]. Cet article présente les différentes technologies médicales qui permettent une surveillance du rythme cardiaque pendant la grossesse et lors de l'accouchement. Grâce aux appareils présentés, la souffrance foetale, l'hypoxie et l'asphyxie prénatale peuvent être suivis et mieux prévenus.

Gruson, D. (2016). "Wall-E vs Skynet : Où va la robotisation/digitalisation du système de soins ?" Revue Hospitalière De France(571): 46-47.

[BDSP. Notice produite par EHESP 8jR0x888. Diffusion soumise à autorisation]. Les possibilités offertes par la transformation numérique en santé sont très étendues. Si les risques qu'induit cette mutation existent, notamment une fragilisation de la relation de soin, nous avons tout à gagner à nous défaire d'un principe de précaution étreint et à accompagner ce virage numérique pour améliorer l'efficacité de notre système de soins.

Guéat, I. (2016). "Téléconsultations en psychiatrie." Revue Hospitalière De France(573): 29-30.

[BDSP. Notice produite par EHESP 9AR0xmI8. Diffusion soumise à autorisation]. Depuis octobre 2013, des consultations en télé-médecine mettent en relation le patient, suivi en centre médico-psychologique, et son psychiatre, au centre hospitalier départemental La Candélie (Lot-et-Garonne). Les deux sites sont distants de cinquante kilomètres. Le dispositif agréé par l'agence régionale de santé bénéficie, pour son volet technique, du soutien de Télésanté Aquitaine. (R.A.).

HAS (2009). Les conditions de mise en œuvre de la télé-médecine en unité de dialyse médicalisée. Evaluation des programmes et politiques de santé publique. Saint-Denis : HAS: 177.

http://www.has-sante.fr/portail/upload/docs/application/pdf/2010-01/argumentaire_conditions_telemedecine_udm_vf.pdf

[BDSP. Notice produite par HAS R0xEJHFF. Diffusion soumise à autorisation]. Le contexte dans lequel s'inscrit cette demande est caractérisé par l'augmentation continue du nombre de patients en insuffisance rénale chronique terminale traités par épuration extrarénale et la volonté de procéder à un déploiement opérationnel de la télé-médecine dans la restructuration de l'offre de soins. La HAS décrit dans ses recommandations l'ensemble des conditions de mise en œuvre de la télé-médecine dans le fonctionnement d'une UDM permettant de garantir la qualité des soins et la sécurité de la prise en charge : modèle organisationnel lié à la télé-dialyse, modalités d'organisation et d'implantation des UDM, organisation des soins par télé-médecine et procédures face aux urgences, aspects techniques du système de télé-dialyse, aspects économiques, juridiques, déontologiques. Un cadre global pour l'évaluation des projets pilotes est également proposé. Ces recommandations pourront servir de support à la mise en place de projets pilotes autorisés par les agences régionales de santé. Elles pourront également évoluer en fonction de la définition du cadre réglementaire d'exercice de la télé-médecine, des retours d'expériences et de l'élargissement du champ de développement de la télé-médecine aux autres modalités de traitement de l'insuffisance rénale chronique terminale.

HAS (2011). Efficacité de la télé-médecine : état des lieux de la littérature internationale et cadre d'évaluation. Note de cadrage. St Denis La Plaine HAS: 41 , tabl., fig.

http://www.has-sante.fr/portail/upload/docs/application/pdf/2011-06/cadrage_telemedecine_vf.pdf

Cette note de cadrage concerne la mise en œuvre d'une évaluation médico-économique de la télé-médecine par un état des lieux de la littérature internationale. Cette évaluation s'inscrit dans une optique d'aide à la décision publique. Elle vise à apporter des éléments de cadrage sur le déploiement de la télé-médecine en France concernant les trois objectifs suivants : Contribuer à la définition d'axes prioritaires de déploiement de la télé-médecine à partir de l'identification des projets pilotes et expérimentations les plus efficaces ; proposer un cadre d'évaluation médico-économique en fonction des indicateurs recensés et d'une classification des projets de télé-médecine ; identifier des modèles économiques afin de proposer des éléments permettant d'orienter la politique de financement. La réalisation de cette évaluation a pour origine la volonté des pouvoirs publics et des acteurs de terrain de déployer la télé-médecine en France. A la suite du décret relatif à la télé-médecine publié en octobre 2010, la Direction Générale de l'organisation des soins a annoncé, début 2011, la mise en place d'un plan triennal de déploiement national de la télé-médecine. Dans cette dynamique actuelle, les attentes du demandeur sont doubles : d'une part, contribuer à alimenter les axes d'orientation de la politique de déploiement de la télé-médecine, et, d'autre part, proposer des outils d'évaluation des expérimentations et projets pilotes concernant les aspects médico-économiques

HAS (2019). Qualité et sécurité des actes de téléconsultation et de téléexpertise : rapport d'évaluation des guides de bonnes pratiques. Saint-Denis : HAS: 150p.

https://www.has-sante.fr/portail/jcms/c_2975588/fr/teleconsultation-et-teleexpertise-rapport-d-elaboration

Le guide propose des bonnes pratiques pour la qualité et la sécurité des actes de téléconsultation et de téléexpertise. Ces bonnes pratiques concernent tous les actes de téléconsultation et de téléexpertise (réalisés en ville, établissements de santé, établissements sociaux et médico-sociaux, domicile des patients) en exercice libéral ou salarié. Les actes non éligibles au remboursement par l'assurance maladie sont également concernés

HAS (2012). Rapport d'analyse des projets article 70. Saint-Denis HAS: 53 , tabl., annexes.

http://www.has-sante.fr/portail/upload/docs/application/pdf/2013-03/rapport_analyse_projets_article_70.pdf

L'article 70 de la LFSS 2012 propose des expérimentations visant à améliorer l'organisation et la coordination des parcours de santé des personnes âgées afin de prévenir les recours évitables à l'hospitalisation (module 1) et de coordonner les soins en sortie d'hospitalisation (module 2). En tant qu'évaluateur de ces projets, la HAS accompagne les acteurs des projets, ARS et promoteurs. Dans ce cadre, elle a élaboré un premier Rapport d'analyse des projets article 70 qui présente l'analyse globale des onze projets tels qu'ils ont été adressés à la HAS, en s'attachant à identifier la présence des différentes activités et stratégies mises en œuvre dans les projets, leur déclinaison et leur cohérence. Cette analyse a été présentée aux acteurs de projets et discutée avec eux, afin de les aider dans leur travail de maturation des projets.

HAS (2013). Efficience de la télémédecine : état des lieux de la littérature internationale et cadre d'évaluation. Note de cadrage. St Denis La Plaine HAS: 154 , tabl., fig., ann.

https://www.has-sante.fr/portail/jcms/c_1064599/fr/note-de-cadrage-efficience-de-la-telemedecine-etat-des-lieux-de-la-litterature-internationale-et-cadre-d-evaluation

La télémédecine est une forme de pratique médicale à distance fondée sur l'utilisation des technologies de l'information et de la communication, qui fait l'objet depuis 2011 d'une stratégie nationale de déploiement. Les attentes autour de la télémédecine sont aujourd'hui très importantes et son développement confronte les pouvoirs publics, les patients et les professionnels à de nouvelles problématiques, en particulier celle de l'évaluation médico-économique des projets. La demande de la DGOS à l'origine de ce rapport s'inscrit dans une optique d'aide à la décision publique. À partir d'une revue de la littérature internationale portant sur l'évaluation médico-économique de la télémédecine, sans délimitation du champ à un domaine d'application spécifique, l'objectif de ce rapport est double : Réaliser un état des lieux des études d'évaluation médico-économique de la télémédecine et apprécier l'apport de cette littérature pour alimenter les réflexions concernant la question de l'efficience de cette forme de pratique médicale, la définition d'axes de déploiement et l'identification de modèles de financement ; Proposer un cadre d'évaluation médico-économique afin de favoriser la mise en œuvre d'évaluations dans le contexte français.

HAS (2017). Expérimentations relatives à la prise en charge par télémédecine – Rapport préalable. St Denis La Plaine HAS: 60 , tabl., fig., ann.

http://www.has-sante.fr/portail/jcms/c_2742462/fr/experimentations-relatives-a-la-prise-en-charge-par-telemedecine-rapport-prealable

La télémédecine est une forme de pratique médicale à distance fondée sur l'utilisation des technologies de l'information et de la communication. Elle fait l'objet, depuis 2011, d'une stratégie nationale de déploiement. Dans ce contexte, l'article 36 de la loi n°2013-1203 de financement de la sécurité sociale pour 2014 permet la réalisation d'expérimentations à compter du 1er janvier 2014 pour une durée de 4 ans, dans 9 régions pilotes : Alsace, Basse-Normandie, Bourgogne, Centre, Haute-Normandie, Languedoc-Roussillon, Martinique, Pays de la Loire et Picardie. Les expérimentations ont pour objectif de déployer des organisations de télémédecine au bénéfice de patients pris en charge en ville ou en structures médico-sociales et de proposer des modes de financement préfigurateurs pour les actes réalisés. Au terme de ces expérimentations, la HAS est chargée de réaliser une évaluation en

vue d'une généralisation, qui fait l'objet d'un rapport transmis au Parlement par le ministre chargé de la santé. Les conditions de mise en œuvre de ces expérimentations doivent être définies dans un cahier des charges arrêté par les ministres chargés de la santé et de la sécurité sociale. Le démarrage des expérimentations n'étant pas effectif à ce jour, la HAS n'a pas été en mesure d'en réaliser l'évaluation. Le présent rapport est donc un rapport préalable qui retrace les principales étapes de l'élaboration des cahiers des charges des expérimentations relatives à la prise en charge par télé-médecine en deux temps : cadre expérimental initial, avec la publication du cahier des charges relatif à la prise en charge par télé-médecine des plaies chroniques et/ou complexes ; évolution du cadre des expérimentations, avec la publication du cahier des charges dit « générique » en vigueur relatif aux actes de téléconsultation et téléexpertise.

Hazebroucq, V. (2003). Rapport sur l'état des lieux en 2003 de la télé-médecine française. Paris Ministère chargé de la Recherche: 30.

Ce rapport répond à 3 objectifs principaux : décrire et catégoriser les applications existantes en France métropolitaine, décrire les réseaux de télécommunication et les débits utilisés, faire le point sur l'offre industrielle française existante en termes de matériels.

Hofman, P. (2014). "[What place and what future for the pathology of infectious and tropical diseases in France?]." *Ann Pathol* **34**(3): 171-182.

The management of tissues and cellular samples by the pathologists in the infectious and tropical diseases pathology field in 2014 needs a strong knowledge of both morphological and molecular domains which includes the good control: (i) of the taxonomy of infectious and tropical diseases pathology leading to the pathogens identification and (ii) of the ancillary methods which can be used in fixed samples in order to detect or better identify these pathogens. There is a recent paradox in France concerning the frequency of infectious diseases to be diagnosed in pathology laboratories and the progressive loss of pathologist's expertise in this domain. Different reasons could explain this statement including the omnipresence of the tumour lesions to be managed in a pathology laboratory as well as the recent constraints associated with the different biomarkers that are mandatory to be detected by immunohistochemistry and/or by molecular biology. Even if the microbiologists play a pivotal role for identifying the different pathogens as well as for the assessment of their sensitivity to the anti-microbial drugs, a large number of infectious diseases can be diagnosed only on fixed tissue and/or cells by the pathologists. The purpose of this review is to describe the current and future issues of infectious and tropical diseases diagnoses in pathology laboratories, in particular in France.

Holue, C. (2010). "Télé-médecine : coup d'envoi de la généralisation." *Sève : Les Tribunes De La Santé*(29): 23-31.

Le décret du 19 octobre 2010 définit et fixe les conditions de mise en œuvre des activités de télé-médecine, qui seront portées et financées essentiellement, dans leur phase expérimentale, par les agences régionales de santé (ARS). Quatre types d'actes sont ainsi amenés à se développer dans les années à venir, au service des patients : la téléconsultation, la télé-expertise, la télésurveillance médicale et la télé-assistance médicale. Avant d'y parvenir, de nombreuses questions techniques, juridiques, économiques et éthiques doivent encore être débattues et trouver des réponses. Mais l'exemple des pionniers inspire les différents acteurs (résumé de l'éditeur).

Hubert, E. (2010). Rapport de la Mission de concertation sur la médecine de proximité. Paris La documentation française: 186.

<http://www.ladocumentationfrancaise.fr/rapports-publics/104000622/index.shtml>

Mme Elisabeth Hubert, ancien ministre, a été chargée par le Président de la République d'une mission portant sur la médecine de proximité, autour de trois objectifs : relancer le dialogue avec les médecins libéraux, permettre un très large échange avec les professionnels concernés et apporter des réponses aux évolutions structurelles que connaît la médecine ambulatoire depuis de nombreuses années. Sur la base de nombreuses rencontres et de déplacements sur le terrain, l'auteur présente un état des lieux des conditions d'exercice de la médecine de proximité, et propose un ensemble de mesures :

simplification des conditions d'exercice, modernisation des systèmes d'information, appui à l'exercice regroupé des professionnels, valorisation de la formation initiale de médecine générale, aide à l'installation dans les zones sous-médicalisées.

Institut Montaigne (2013). Accès aux soins : en finir avec la fracture territoriale. Paris Institut Montaigne: 73 , tabl., fig.

<http://www.institutmontaigne.org/fr/publications/acces-aux-soins-en-finir-avec-la-fracture-territoriale>

Très onéreux, d'une grande complexité institutionnelle et administrative, le système de soins français pêche également par l'archaïsme de son organisation, caractérisé par de forts cloisonnements entre ville et hôpital comme entre professionnels de santé. Au-delà des problèmes évidents de répartition sur le territoire des professionnels de santé, la question est sans doute plutôt celle du modèle d'organisation des soins en France, qui ne correspond plus aux exigences sociales, démographiques et technologiques de notre pays. Face à ces défis et dans un contexte de finances publiques contraint, comment adapter notre système de santé ? C'est vers une organisation décloisonnée, régionalisée, construite autour des besoins des patients qu'il faut s'orienter. Le système de santé doit également s'adapter aux exigences des nouvelles générations de professionnels de santé et leur offrir les moyens d'exercer leur métier de façon regroupée, en bénéficiant de l'apport des nouvelles technologies.

IQVIA (2018). Télémedecine : des économies en trois actes. Paris IQVIA: 36 , tab., graph., fig.

<https://www.leem.org/publication/telemedecine-des-economies-en-trois-actes>

Une nouvelle étude réalisée par IQVIA pour l'association des laboratoires japonais présents en France (LaJaPF), avec le soutien des entreprises du médicament (Leem), évalue à 356 millions d'€ par an les économies possibles grâce à trois actes de télémedecine sur trois pathologies. La télésurveillance de la pression artérielle pourrait assurer une économie de 322 millions d'€. Pour le cancer de la prostate, la téléconsultation avec l'urologue diminue les dépenses de 26,3 millions. Enfin, pour les patients diabétiques avec suspicion de rétinopathie, la télé-expertise, via l'envoi d'images rétiniennes par un professionnel de santé à un ophtalmologue, permettrait de réduire les dépenses de 8 millions d'€. Ces économies reposent essentiellement sur une diminution du coût des consultations, des frais de transport et des arrêts de travail liés aux consultations de suivi. Ces résultats sont d'autant plus intéressants qu'il s'agit d'une étude au plan national, à partir des données de l'Assurance maladie et que les actes de télémedecine visés par l'étude s'intègrent assez facilement dans les pratiques médicales actuelles, sans nécessiter d'investissement dans des matériels coûteux.

Jaffiol, C., et al. (2016). Prise en charge des maladies chroniques. Redéfinir et valoriser le rôle du médecin généraliste. Paris Académie Nationale de Médecine: 15.

<http://www.academie-medecine.fr/articles-du-bulletin/publication/?idpublication=100568>

Les maladies chroniques sont la première cause de décès et la source principale des dépenses de santé. Leur dépistage précoce permet de limiter leur gravité évolutive et de réduire sensiblement leur coût. Mais, leur suivi thérapeutique se heurte à deux obstacles : le défaut fréquent d'observance du traitement par le patient et aussi, plus rarement, l'inadaptation thérapeutique à l'évolution clinique par le médecin. C'est pourquoi, il faut revoir fondamentalement la prise en charge du patient chronique pour le rendre autonome dans la gestion de sa maladie tout en donnant au praticien les moyens de gérer et de coordonner les diverses étapes de son parcours de soin. Cela exige de changer les mentalités de part et d'autre, mais aussi de donner au praticien les moyens financiers lui permettant de consacrer à ses patients plus de temps, au centre d'une nouvelle organisation interprofessionnelle. La prévention et l'éducation thérapeutique du patient (ETP) sont les clés de cette révolution thérapeutique, fondée aussi sur l'éducation à la santé, une meilleure formation des professionnels de santé, un accès accru au numérique, mais aussi et surtout la reconnaissance, par des mesures concrètes, de la place du médecin généraliste dans un nouveau parcours de soins où il doit avoir un rôle central de coordination (résumé d'auteur).

Jouny, J., et al. (2017). "Télémedecine et prise en charge somatique des personnes avec autisme, dyscommunicantes et autres handicaps." *Revue Hospitalière De France*(576): 24-26.

[BDSP. Notice produite par EHESP AmGCR0xJ. Diffusion soumise à autorisation]. La télémédecine contribue à mettre à disposition les savoirs d'experts dans des domaines spécifiques. Depuis juin 2016, l'établissement public de santé Barthélemy-Durand s'emploie à rendre accessibles, à tout praticien exerçant sur le territoire national, les connaissances de son centre de référence en autisme : le centre régional Douleur et soins somatiques en santé mentale, autisme et handicap. Un centre unique en France. (R.A.).

Jouzel, M. et Costes, M. (2017). "Filière gériatrique de l'agglomération rennais : L'infirmier assistant de télémédecine, une nouvelle compétence." Revue Hospitalière De France(574): 25-26.

[BDSP. Notice produite par EHESP IsADR0xE. Diffusion soumise à autorisation]. Quel accès aux soins pour les patients accueillis en établissements sanitaires et médico-sociaux ? Cette réflexion territoriale anime depuis plusieurs années la Filière gériatrique de l'agglomération rennais (FIGAR). La télémédecine figure en bonne place parmi les solutions retenues pour améliorer la réponse médicale. TéléFIGAR est né en 2014. Un dispositif porté par la coordination de ses acteurs et la création d'une nouvelle compétence : l'infirmier assistant de télémédecine. (R.A.).

Karout, P. (2005). "Service vigilance : solution de veille préventive à distance pour l'accompagnement à domicile de personnes en perte d'autonomie." Gérontologie Et Société(113): 25-35, fig.

[BDSP. Notice produite par FNG vSovR0x4. Diffusion soumise à autorisation]. Vivre son grand âge à domicile est un enjeu actuel : 98% des plus de 75 ans souhaiteraient pouvoir continuer à vivre chez eux le plus longtemps possible même lorsqu'ils sont seuls. Face à cette situation, l'entreprise Vicineo a travaillé avec plusieurs équipes de professionnels de l'accompagnement à domicile pour envisager grâce aux "technologies Internet" un nouveau service de veille à distance complémentaire des interventions à domicile et plus riche que la traditionnelle télé-alarme : le "Service Vigilance".

Kerleau, M., et al. (2001). La dynamique de l'innovation en santé, Paris : Collège des Économistes de la Santé.

Ce document présente les actes du 2ème colloque International des Économistes de la Santé : "La dynamique de l'innovation en santé" organisé par le Collège des Économistes de la Santé en février 2001.

Kornblum, C., et al. (2000). Télémédecine & Urgences. Paris MSSPS: pag. mult , 2 ann.

De nombreux services d'urgence ou de radiologie utilisent déjà les technologies de l'information et de la communication, notamment dans le domaine de la neurochirurgie et de la traumatologie. Pour concourir à une diffusion encore plus grande de la télémédecine et son extension à l'ensemble de l'activité des services d'urgence, la direction de l'hospitalisation et de l'organisation des soins a fait réaliser une étude intitulée "Principes directeurs de l'utilisation de la télémédecine pour les urgences". L'analyse développée par la société Expertech et pilotée par un comité réunissant des professionnels de services d'urgences, a eu pour objectif d'étudier et d'évaluer les applications de télémédecine existantes en France et à l'étranger. Elle est riche d'enseignements. Le triple intérêt de la télémédecine pour les urgences est clairement démontré. Son utilisation est tout à fait appropriée aux différentes séquences de la chaîne des urgences qui va du pré-hospitalier, à l'accueil dans les services d'urgence où sont pratiqués les examens, jusqu'à la prise en charge sur le même site ou le transfert dans un autre établissement et même jusqu'au post-hospitalier facilitant une coordination des soins entre les multiples intervenants. L'interopérabilité des sous-systèmes d'information est donc prioritaire. C'est pourquoi un cahier des charges concernant la mise en œuvre de la télémédecine dans les services d'urgence est actuellement en cours de rédaction par un groupe d'experts hospitaliers à partir de cette étude. Il sera prochainement publié et aidera les structures de soins à effectuer leurs appels d'offres. Mais de nombreuses recommandations figurent dès maintenant dans le présent document. Elles intéresseront l'ensemble des acteurs du terrain, professionnels de santé et directions d'établissements : dans le domaine complexe des urgences, il est clair, que notamment, l'organisation fonctionnelle doit précéder la mise en place des outils techniques. Ces recommandations seront également utiles aux agences régionales de l'hospitalisation et services déconcentrés du ministère qui suivent la mise en œuvre des SROS Urgences (d'après la préface).

Lamothe, L., et al. (2013). "L'utilisation des télésoins à domicile pour un meilleur suivi des maladies chroniques." *Sante Publique* **25**(2): 203-211.

[BDSP. Notice produite par EHESP IDkr9R0x. Diffusion soumise à autorisation]. Cette étude vise à comprendre comment les technologies de télésoins à domicile peuvent concourir à une amélioration des services offerts aux personnes atteintes de maladies chroniques. Une technologie de télésoins à domicile a été utilisée par des personnes âgées canadiennes ayant au moins une des maladies chroniques ciblées. Des observations participatives, une analyse documentaire et des entrevues ont permis de recueillir les données nécessaires à l'analyse du processus d'implantation et au monitoring des résultats, qui montrent que l'utilisation de cette technologie permet de mettre en place plusieurs conditions auxquelles l'organisation des services doit répondre pour améliorer l'offre de services aux personnes atteintes de maladies chroniques, notamment en termes de collaboration interprofessionnelle, d'accès des professionnels à l'information et à l'expertise nécessaires ou de participation active du patient. Le succès de son implantation dépend toutefois d'une analyse détaillée du contexte local dans lequel elle est introduite.

Lano, J., Geri-Trial, C., Cabrol, M. et Téot, L. (2017). "Expérimentations de remboursement des actes de télé-médecine en plaies etcicatrisation en France. ." *Revue Francophone de Cicatrisation* **1**(4): 58-61.

Les expérimentations de l'article 36 de la loi de financement de la Sécurité sociale pour 2014 (LFSS 2014), visent à définir les modèles de rémunération qui pourraient être mis en place dans le cadre de la télé-médecine. Initialement prévue dans neuf régions, cette expérimentation est étendue depuis la LFSS2017 à l'ensemble du territoire national. Les professionnels requis pour les actes de télé-médecine du réseau Cicat-LR, qui fait suite au projet Domoplaies, ont débuté l'expérimentation selon le cahier des charges des expérimentations relatives à la prise en charge par télé-médecine des plaies chroniques et complexes permises par la LFSS2014 et, depuis février 2017, selon les procédures préalables au programme Etapes. Cette expérimentation vise à fixer les dispositions réglementaires et la classification commune des actes de télé-médecine pour déterminer le modèle tarifaire adéquat et analyser son impact sur le système de soins. Elle devrait permettre de pérenniser le projet Domoplaies et l'élargir à d'autres régions, mais également d'intégrer la pratique de la télé-médecine dans le parcours de santé des patients porteurs de plaies. The experimentation of article 36 of the French law relating to the financing of the Social Security system for 2014 (LFSS 2014), aims to define the reimbursement models which could be put in place in the context of telemedicine. Initially planned for nine regions, this experimentation has been extended by the LFSS 2017 to the whole of France. The professionals involved in the telemedicine procedures of the Cicat-LR network, which falls within the scope of the Domoplaies project, started the experimentation in accordance with the specifications of the experiments relating to the use of telemedicine in the treatment of chronic and complex wounds authorised by the LFSS 2014 and, since February 2017, in accordance with the procedures required by the Etapes programme. This experimentation aims to set out the regulatory measures and the common classification of telemedicine procedures to determine the suitable price model and to analyse its impact on the health care system. It should ensure the continuation of the Domoplaies project and its extension to other regions, as well as the integration of telemedicine into the health care pathway of patients with wounds.

Lard, B. et al. (2010). "Loi HPST : un an déjà ! Mise en perspective. Dossier." *Actualités Jurisanté*(71): 36 , tabl.

Ce dossier fait le bilan de la loi Hôpital Patients Santé Territoire après une année de mise en place. Sans prétendre à l'exhaustivité, le Centre de droit de Jurisanté a préféré consacrer l'analyse à certaines problématiques particulières : la gouvernance hospitalière, la coopération des professionnels de santé, le nouveau statut des ESPCI (Etablissements de santé privés d'intérêt collectif) et la télé-médecine.

Lareng, L. (2002). "Réseau télé-médecine et réseau Samu." *Technologie Et Sante*(46-47): 22-28.

[BDSP. Notice produite par AHPDOC WR0x718Y. Diffusion soumise à autorisation]. Il a fallu attendre 1992 pour assister à une augmentation des échanges médicaux interactifs à distance. La

télémédecine, considérée à ses débuts comme un progrès exclusif des télécommunications permettant de soigner à distance, s'est révélée comme une nouvelle pratique médicale susceptible de traiter simultanément la santé et la qualité de vie. Cet article porte sur les aspects suivants : - La télémédecine dans la pratique médicale ; - Typologie de la télémédecine en France ; - Disciplines médicales et télémédecine ; - Les réseaux de santé et l'aménagement du territoire (soins, prévention et formation) ; - Le réseau télémédecine et le réseau Samu ; - Le niveau régional, lieu privilégié de la télémédecine au service du citoyen ; - La dimension humaine et humanitaire.

Lareng, L et al. (2006). "La genèse de la loi sur la télémédecine. Discussion : La télémédecine." Bulletin De L'Académie Nationale De Médecine **190**(2): 323-330.

[BDSP. Notice produite par INIST-CNRS XR0xKP2U. Diffusion soumise à autorisation]. Dès la création de l'Institut Européen de Télémédecine le 10 juillet 1989 à l'Université Paul Sabatier de Toulouse, il est apparu qu'une loi serait nécessaire pour pérenniser cette nouvelle pratique médicale. La décision du gouvernement en 1993, de faire de la Région Midi-Pyrénées un terrain expérimental pour créer un réseau de télémédecine gradué et coordonné réunissant l'ensemble des établissements de santé publics, privés et les généralistes, nous incite à gérer la télémédecine à l'image d'un service hospitalier. Il en est résulté la création de systèmes institutionnels adaptés au fonctionnement pluri-établissements nécessitant des dispositions réglementaires particulières, sur le plan des responsabilités des professionnels de santé, du financement, de la sécurité des données ainsi que du recours aux nouvelles technologies de l'information et de la communication. Cela explique l'élaboration d'une loi, pour faciliter la pratique de la télémédecine. Les articles spécifiques à la télémédecine ont été intégrés dans la loi du 13 août 2004 relative à la réforme de l'assurance maladie.

Lasbordes, P. (2009). La télésanté : un nouvel atout au service de notre bien-être. Un plan quinquennal éco-responsable pour le déploiement de la télésanté en France. Paris Ministère de la santé: 247.
<http://www.ladocumentationfrancaise.fr/rapports-publics/094000539/>

Après avoir présenté les enjeux et les bénéfices attendus de la télésanté, et mené une analyse critique de plus de six cent références mondiales, la mission s'est attachée à présenter : 15 recommandations concrètes pour un déploiement immédiat de la télésanté ; une structure de gouvernance forte ; une feuille de route 2010-2014.

Launois, R. et al. (2006). "Les aspects économiques de la télémédecine. Discussion : La télémédecine." Bulletin De L'Académie Nationale De Médecine **190**(2): 367-379.

[BDSP. Notice produite par INIST-CNRS R0x70me7. Diffusion soumise à autorisation]. Les évaluations des technologies de santé se proposent d'étudier l'impact différentiel des actions de santé dans un système de soins complexe qui est caractérisé par la dynamique interactive des comportements et la diversité des institutions. Les cadres d'évaluation de la télémédecine actuellement disponibles se limitent le plus souvent à une simple comparaison du coût de celle-ci par rapport au coût des modes de prises en charge traditionnels qui occultent les bénéfices associés à la mise en réseau. Les schémas actuels de collecte de l'information se prêtent toutefois mal à une recherche rigoureuse de l'efficacité de cette innovation organisationnelle majeure en situation réelle d'usage. Les essais randomisés s'efforcent de neutraliser toute interférence parasite qui pourrait compromettre la recherche d'un lien de causalité entre l'action de santé et le résultat obtenu. Leur méthodologie qui érige la clause "ceteris paribus" en principe de bonnes pratiques sont peu propices à l'analyse des comportements et des structures. Les enquêtes observationnelles descriptives partent des réalités de terrain pour les dépendre le plus fidèlement possible. Mais par définition, elles supposent que le cours naturel des choses ne soit infléchi par aucune intervention. L'absence de plan expérimental multiplie les risques de biais et rend impossible la recherche des causalités. Ces enquêtes interdisent toute estimation de l'efficacité différentielle. Pour évaluer la télémédecine, la gestion de projet et les études quasi expérimentales sont les deux outils à privilégier en première intention. La première technique permet au réseau de vérifier en interne si les objectifs qu'ils se sont fixés ont bien été atteints. Les secondes introduisent un comparateur dans l'analyse, puisque tous les schémas d'étude qui sont envisageables dans leur cadre, reposent sur la distinction exposés/non exposés. Les unes et les autres reposent sur la réalité des comportements du prescripteur et des patients. Leur mise en œuvre séquentielle permet

de s'assurer de la bonne mise en place d'un espace nouveau de coordination et de justifier la diffusion de la télémédecine par rapport aux prises en charge traditionnelles.

Laurent, P. et Schroeder, J. B. (2012). Télémédecine 2020 : modèles économiques pour le télésuivi des maladies chroniques. Courbevoie Snitem: 64 , tabl., graph., fig.

[http://www.wk-](http://www.wk-pharma.fr/actualites/upload/pharmacie/pharmacie_actu65189_Livre_Blanc_TLM_Syntec_Snitem_2013.pdf)

[pharma.fr/actualites/upload/pharmacie/pharmacie_actu65189_Livre_Blanc_TLM_Syntec_Snitem_2013.pdf](http://www.wk-pharma.fr/actualites/upload/pharmacie/pharmacie_actu65189_Livre_Blanc_TLM_Syntec_Snitem_2013.pdf)

Les industriels du matériel médical, réunis au sein du Snitem, et les entreprises du numérique, représentées par le Syntec Numérique, ont présenté hier un Livre blanc sur la télémédecine focalisé sur le suivi des pathologies chroniques (diabète, bronchite chronique, insuffisance cardiaque, etc.). Maintenant que les technologies existent et que le cadre réglementaire a été éclairci, les industriels demandent aux autorités de santé certaines garanties afin de sortir du stade expérimental actuel et de commencer des opérations pilotes de plus grande envergure. En s'appuyant sur des expériences étrangères, les auteurs du Livre blanc esquissent cinq scénarios de prise en charge, qui supposent des évolutions plus ou moins importantes. Dans tous les cas, ces programmes aboutissent à une amélioration du confort de vie des patients et une baisse du nombre d'hospitalisations. De plus, des réductions de coûts sont constatées grâce à une moindre consommation des ressources hospitalières. Ce livre blanc présente 6 projets européens et américains, axés sur la prise en charge de maladies chroniques. Cette revue aborde les organisations et dispositifs déployés, les modèles économiques mis en place et l'évaluation médico-économique effectuée. Les auteurs identifient enfin des facteurs clés de succès, nécessaires au déploiement à grande échelle de la télémédecine pour le suivi de maladies chroniques : une vision stratégique portée par une impulsion politique forte et continue dans le temps ; l'implication de l'organisme payeur dans la structuration de la filière ; le portage du projet par les professionnels de santé ; le rôle pivot du médecin traitant (ou spécialiste) dans l'inclusion du patient, et son suivi tout au long du parcours au travers le dossier médical informatisé.

Le Guen, T., et al. (2003). "La télémédecine en Guyane : une approche concrète." Techniques Hospitalières(678): 16-18, ill.

[BDSP. Notice produite par ANFH 7ymR0xY1. Diffusion soumise à autorisation]. En matière de télémédecine en Guyane, la téléconsultation entre 4 sites isolés et l'hôpital de Cayenne a été expérimentée dans trois spécialités : dermatologie, parasitologie et cardiologie, depuis novembre 2001.

Le Guen, J. M. (2011). ""La loi HPST, une étatisation du système de santé"." Réseaux Sante & Territoire(40): 9-11.

Cet article rapporte le point de vue de Jean-Marie Le Guen, député de Paris, sur la loi HPST (Hôpital, Patients Santé et Territoires). Selon lui, cette loi a favorisé une étatisation de la santé avec la création des agences régionales de santé, a négligé l'aspect santé publique et n'a pas répondu à la question cruciale de la désertification médicale.

Legmann, M. (2010). Définition d'un nouveau modèle de la médecine libérale. Paris La documentation Française: 46 , graph., annexes.

<http://www.ladocumentationfrancaise.fr/rapports-publics/104000184/index.shtml>

Le Docteur Michel Legmann, Président du Conseil national de l'Ordre des médecins, a été chargé par le Président de la République de mener une réflexion concernant la définition d'un nouveau modèle de la médecine libérale qui prenne en compte les aspirations des futurs médecins et permette de répondre de façon plus efficiente à la demande de soins de la population. La mission présente un état des lieux de l'exercice de la médecine en France qui confirme la crise profonde que connaît la médecine libérale : vieillissement des médecins en exercice, manque d'attractivité de l'activité libérale, baisse inéluctable des effectifs médicaux dans les dix prochaines années compte tenu de l'évolution à la baisse du numerus clausus de 1972 à 1999, etc. Sur cette base, la mission propose un

certain nombre de mesures qui s'articulent autour de trois axes : la formation, initiale et continue, l'installation et les conditions d'exercice.

Lemire, M. (2010). "La participation de l'utilisateur à la production de soins : l'exemple des nouveaux modèles de suivi à distance fondés sur les technologies de télé-soins." Santé Société Et Solidarité : Revue De L'observatoire Franco-Québécois(2/2009): 93-97.

<http://www.irdes.fr/Ofqss/2009/SomAPEd22009.pdf>

La participation de l'utilisateur à la production de soins revêt une importance particulière avec le développement de nouveaux modèles de suivi à domicile des maladies chroniques. Cet article cherche à comprendre comment ces nouveaux modèles impliquent l'utilisateur dans la production de soins, et dans quelle mesure ils favorisent la responsabilité personnelle. L'analyse s'appuie sur une étude de cas ayant porté sur un service de télé-soins déployé au Québec. L'étude révèle que les caractéristiques favorables du service au plan de la responsabilisation définie en termes d'habilitation et ses limites par rapport à une responsabilisation définie en fonction de l'idéal type du "patient expert". Dans les faits, le service de télé-soins favorise plutôt le renforcement des processus de contrôle et de normalisation qui caractérisent l'approche médicale conventionnelle. Pour l'utilisateur en convalescence ou à risque, il s'agit néanmoins d'un dispositif de sécurisation important (résumé d'auteur).

Lemoine, S., et al. (2014). "Parcours de soin : Hypertension artérielle, un parcours optimisé pour contrôler 7 hypertendus sur 10 en 2015." Concours Médical **136**(4): 273-308.

[BDSR. Notice produite par ORSRA rR0xICkE. Diffusion soumise à autorisation]. Ce dossier s'intéresse à un parcours optimisé pour contrôler 7 hypertendus sur 10 en 2015 : il expose la qualité du dépistage comme première condition de la prévention, la place des mesures ambulatoires dans la confirmation du diagnostic, l'annonce du diagnostic comme prérequis indispensable, la gestion de l'urgence hypertensive, l'initiation du traitement, les particularités du sujet âgé, le suivi à court terme comme investissement pour l'avenir, comment motiver le patient par une Education Thérapeutique du Patient de proximité, le rôle clé du médecin généraliste dans le combat contre l'inertie médicale, la nécessité du contrôle tensionnel en prévention secondaire, la place des infirmières spécialisées dans le suivi éducatif sur le long terme, le télé-suivi comme effet actif possible sur le contrôle tensionnel. On fait alors le constat suivant : il existe deux philosophies différentes, celle de la Société française d'hypertension artérielle (SFHTA), et celle des Sociétés européennes d'hypertension et de cardiologie (ESH/ESC). Le dossier se termine sur Le Comité français de lutte contre l'hypertension artérielle comme relais d'information, les centres d'excellence européens en HTA, la Fédération française de Cardiologie et les associations dans leur combat pour un plan cœur.

LESSIS (2009). Téléradiologie : Pour un déploiement rapide et efficient de solutions sécurisées. Livre blanc GIXEL-LESSIS. Neuilly sur Seine LESSIS: 17.

Dans un contexte budgétaire tendu, les risques de désertification médicale et d'inégalité de traitement des patients deviennent très préoccupants. Ces risques, qui n'épargnent pas plus les grandes villes que les zones rurales, peuvent être maîtrisés en repensant les organisations en concertation avec les professionnels de la santé. La téléradiologie, qui constitue une déclinaison de la télésanté, peut constituer un soutien technologique au service de la collectivité, tout en insérant dans le développement d'une économie numérique exportatrice pour notre pays.

Lopez, A. et Compagnon, C. (2015). Pertinence et efficacité des outils de politique publique visant à favoriser l'observance. Paris, Igas.

<http://www.igas.gouv.fr/IMG/pdf/2015->

[037R_Pertinence_et_efficacite_des_outils_de_politique_publicque2_.pdf](http://www.igas.gouv.fr/IMG/pdf/2015-037R_Pertinence_et_efficacite_des_outils_de_politique_publicque2_.pdf)

En novembre 2014, le Conseil d'Etat avait annulé "pour incompétence" les deux arrêtés décriés qui liaient la prise en charge de la Sécurité sociale à la bonne utilisation d'un dispositif médical dit à pression positive continue (PPC) pour le traitement des apnées du sommeil. Il s'agissait de placer tous les patients portant ce masque la nuit sous "télé-observance", avec l'emploi des objets connectés.

Après cet épisode, la ministre de la Santé Marisol Touraine avait missionné l'IGAS sur l'observance des

traitements par les patients, notamment lorsque ils sont atteints d'une maladie chronique. Dans son rapport de juillet 2015, rendu public seulement un an plus tard, la mission "déconseille fortement" de moduler les remboursements des soins en fonction de l'observance des traitements. Outre les difficultés qui seraient rencontrées, notamment pour mesurer l'observance, ce serait s'engager sur une pente dont le terme et les conséquences sont difficiles à apprécier. En revanche, l'IGAS préconise de développer l'éducation thérapeutique et l'accompagnement des patients, et de "développer une offre de télé-suivi-accompagnement" s'appuyant sur l'essor des appareils connectés, qui vont "profondément modifier l'exercice de la médecine". Le financement de ces services de télé-suivi-accompagnement dépendrait de leur performance, "faisant de la bonne observance et de la fidélisation des patients des marqueurs de la qualité de l'accompagnement".

Lutzler, P., et al. (2010). "Apports de la télémédecine dans les prises en charge gériatriques. Déploiement du système de visiophonie. Vis-AGES dans l'arc alpin." *Revue Hospitalière De France*(532): 40-42.

[BDSP. Notice produite par EHESP JR0x9Hp9. Diffusion soumise à autorisation]. Situé dans les Hautes-Alpes, aux confins de la région Provence-Alpes-Côtes-d'Azur, le bassin de population du Queyras, du Guillestrois, de l'Embrunais et du Savinois est composé de quatre cantons regroupant 19 000 habitants. 20% sont âgés de plus de 65 ans, et 10% ont plus de 75 ans. Cet article présente la démarche qui a prévalu à l'utilisation d'un système de visiophonie adapté aux soins entre deux structures sanitaires éloignées de 45 km, ce qui représente presque une heure de trajet sur routes difficiles : l'hôpital d'Aiguilles et celui d'Embrun.

Mace, J. M., et al. (2002). "Prise en charge médicale du patient cardiaque." *Technologie Et Sante*(46-47): 139.

[BDSP. Notice produite par AHPDOC I5NwfR0x. Diffusion soumise à autorisation]. Au sommaire de ce numéro consacré à la prise en charge médicale du patient cardiaque : - Les statistiques ; - La prise en charge diagnostique initiale : cabinet privé ; - La prise en charge thérapeutique en situation de crise (Samu) ; - La prise en charge diagnostique : investigations approfondies ; - La prise en charge interventionnelle : investigations approfondies ; - La prise en charge chirurgicale ; Anesthésie du patient cardiaque ; - Surveillance de l'anesthésie cardiologique ETO et du segment ST ; - Réanimation cardiaque ; - Accueil en service froid ; - Rééducation du patient cardiaque ; - Prise en charge du patient cardiaque à sa sortie (interview).

Maillard, N., et al. (2014). "Cardiac remote monitoring in France." *Arch Cardiovasc Dis* **107**(4): 253-260.

The increase in number of implanted cardiac medical devices and the announced decrease in number of cardiologists have led to remote monitoring being considered as a pivotal tool for patient follow-up. For 10 years, remote monitoring has been the subject of multiple clinical studies. In these studies, reliability and clinical efficacy have been demonstrated, but the use of remote monitoring remains quite limited in France compared with other countries. To explain this delay in uptake, some organizational difficulties and the lack of reimbursement of remote monitoring are often mentioned. The results of medico-economic studies might provide answers about the value of remote monitoring and enable the supervisory authorities to define how its use will be financed. This review provides a global view of remote monitoring in France, and covers the principle, clinical efficacy, organizational and regulatory aspects, and medico-economic data.

Manrique, G. (2005). "Les soins de demain s'inventent aujourd'hui. La vision d'un industriel : IBM Division Santé & Sciences du vivant." *Gérontologie Et Société*(113): 89-96, fig.

[BDSP. Notice produite par FNG Bx9mR0xs. Diffusion soumise à autorisation]. Cet article décrit l'action d'IBM dans le domaine de la télémédecine. Les nouvelles possibilités des NTIC (nouvelles technologies de l'information et de la communication) permettent à distance, un meilleur suivi de la santé des populations jusqu'aux âges avancés de la vie, pas seulement à visée curative mais également à visée préventive. Les solutions techniques aujourd'hui existent. Mais cela ouvre en gérontologie des perspectives importantes qui exigent de la part des industriels comme des institutions, d'oser des partenariats public-privé ambitieux pour tester et valider de nouveaux modèles socio-économiques de prise en charge.

Marsault, C., et al. (2006). "Le réseau TELIF à l'Assistance Publique : Hôpitaux de Paris. Discussion : La télémédecine." Bulletin De L'academie Nationale De Médecine **190**(2): 349-355.

[BDSP. Notice produite par INIST-CNRS yCzR0xOd. Diffusion soumise à autorisation]. Après une étude portant sur l'intérêt et la faisabilité de la mise en place d'un réseau dans le cadre de la grande garde de neurochirurgie de la Région Ile-de-France, le réseau TELIF a été créé en novembre 1994. Encore aujourd'hui, sa principale activité concerne la prise en charge des urgences neurochirurgicales en Ile-de-France. Le bilan du réseau est très positif ayant atteint son objectif de réduction de plus de 70% des transports inutiles de patients entre hôpitaux. Si le réseau TELIF n'a pas été très utilisé dans le cadre de la télé-expertise, il apporte une aide très importante aux hôpitaux de gériatrie dans l'interprétation et le découplage des activités d'imagerie. Ce réseau a été exemplaire, puisqu'il a été le premier réseau ayant comporté une évaluation annuelle de son activité. Aujourd'hui, la technologie qu'il utilise est obsolète et il devrait rapidement évoluer, en utilisant les technologies modernes, dans le cadre d'une intégration dans le dossier du patient informatisé, en conservant ses activités importantes (neurochirurgie et gériatrie) et en s'ouvrant non seulement vers l'ensemble des hôpitaux publics de la région Ile-de-France, comme c'est le cas aujourd'hui, mais également vers les différentes modalités de prise en charge des patients en ville.

Mathieu-Fritz, A., et al. (2012). "Télémédecine et gériatrie. La place du patient âgé dans le dispositif de consultations médicales à distance du réseau TéléGéria." Gérontologie Et Société(141): 117-127.

[BDSP. Notice produite par FNG R0x9DrpG. Diffusion soumise à autorisation]. À partir d'une perspective combinant analyses sociologique et éthique et évaluation médicale, les auteurs rendent compte des usages de la télémédecine en gériatrie, observables dans le cadre de téléconsultations médicales, pour comprendre la place qui est faite aux patients âgés. Ils montrent que celle-ci dépend principalement de l'organisation pratique de la consultation et des modalités d'usage concrètes des dispositifs techniques, qui ne sont, en eux-mêmes, ni déshumanisants ni humanisant. Les auteurs mettent ainsi en évidence l'importance des évaluations socio-organisationnelles in situ de ces nouvelles formes d'exercice médical. (R.A.).

Maurey, H. et Fichet, J. L. (2013). Rapport d'information sur la présence médicale sur l'ensemble du territoire. Paris Sénat: 133 , ann.

<http://www.senat.fr/rap/r12-335/r12-3351.pdf>

Réalisé dans le cadre de la commission du développement durable, qui a notamment en charge les questions d'aménagement du territoire, ce rapport d'information du Sénat sur la présence médicale sur l'ensemble du territoire fait le constat d'une situation inacceptable et qui ne va pas en s'améliorant - difficultés dans l'accès aux soins, inégalités dans la répartition territoriale de l'offre de soins et baisse significative de la démographie médicale. Les sénateurs proposent plusieurs mesures radicales pour lutter contre le fléau des déserts médicaux. Ils évoquent notamment une extension aux médecins du conventionnement sélectif en fonction de la nature des zones d'installation ainsi que l'obligation pour les spécialistes, à la fin de leurs études, d'exercer pendant deux ans dans les hôpitaux sous-dotés. Ils ne croient plus aux mesures incitatives, qu'ils jugent opaques, complexes et inefficaces. Ils souhaitent flécher l'installation des professionnels de santé vers des territoires délaissés, procédé qui a déjà été appliqué aux infirmiers en 2008 avec de bons résultats (un bond des installations de 33 % dans les déserts médicaux en trois ans). Mais tous les gouvernements ont reculé devant le poids électoral des médecins et les grèves des internes. Parmi les autres recommandations retenues : la nécessité d'intervenir dès à présent auprès des étudiants, afin de les prévenir que ce système pourrait être généralisé si les déserts médicaux s'étendent d'ici à la fin de la législature ; régionaliser le numerus clausus en fonction des besoins des territoires, alors qu'à l'heure actuelle ce mécanisme ne définit les effectifs d'étudiants en médecine qu'au niveau national. Les autres propositions du groupe de travail sont plus consensuelles. Elles consistent notamment à encourager le travail en équipe et la coopération entre professionnels de santé, les nouvelles formes d'exercice, les transferts d'actes entre professions de santé, la télémédecine, l'allongement de la durée d'activité des médecins en exonérant les retraités actifs du paiement des cotisations d'assurance vieillesse, ou encore à réformer les études de médecine et à créer au niveau départemental une commission de la démographie médicale.

Medeiros de Bustos, E., Berthier, E., Chavot, D., Bouamra, B. et Moulin, T. (2018). "Evaluation of a French Regional Telemedicine Network Dedicated to Neurological Emergencies: A 14-Year Study." *Telemed J E Health* **24**(2): 155-160.

BACKGROUND: Equality in healthcare between urban and rural areas is problematic in France. Telemedicine networks are expected to improve equality in expertise assessment. We aimed to evaluate the use and impact of a regional rural French telemedicine network, dedicated to medical and surgical neurological emergencies, on interhospital patient transfers. **METHODS:** Eight community hospital emergency departments were remotely connected to the only university hospital in Franche-Comte, France. We prospectively obtained data from all patients consecutively admitted to emergency care departments in the region and who received medical or neurosurgical expertise by telemedicine from January 2002 to December 2015. The reasons for requesting expertise, number of requested neurological opinions, and interhospital patient transfers were analyzed. Economic savings were determined by estimating the cost of avoided transfers. **RESULTS:** A total of 23,710 patients had telemedicine consultations in the region. The network was used by every community hospital (independently of the existence of local neurological teams). These consultations were overwhelmingly for cases of stroke (30%) and head or spinal injuries (36%). Cerebral tumors represented 9% of teleconsultations. In 2015, 75% of patients admitted to the remote hospitals that did not have onsite neurological expertise nevertheless received neurovascular tele-expertise. The rate of thrombolysed patients dramatically increased within 13 years regionally (9.9%) and 33.5% of thrombolyses were performed by telemedicine. The number of patients examined by telemedicine and admitted for head or spinal injuries also increased over the 13-year period (12% vs. 21%). Secondary interhospital transfers were halved for both pathologies. The estimated saving is approximately euro3.5 million. **CONCLUSION:** Telemedicine networks facilitate acute-phase neurological assessment and prevent unnecessary secondary interhospital transfers.

Midy, F. (1998). La télémédecine : document de travail. Rapport Credes. Paris CREDES: 31.

À partir d'une revue de la littérature (Medline, base documentaire du Credes...), ce rapport bibliographique tente tout d'abord une définition de la télémédecine. Il en définit ensuite les enjeux, et fait une évaluation à la fois médicale et économique de ces nouvelles technologies. Il comprend, en annexe, une liste des expérimentations en obstétrique, ainsi qu'une évaluation des résultats du point de vue des décideurs publics, des patientes et des praticiens.

Midy, F., et al. (2000). Télémédecine & évaluation. Aide méthodologique à l'évaluation de la télémédecine. Rapport Credes. Paris M.S.S.P.S.: 80, tabl., graph.

Ce document a pour objectif de faire le point sur ce qu'il est raisonnable d'envisager en termes d'évaluation dans le domaine de la télémédecine. Dans un premier chapitre, les auteurs délimitent leur champ de réflexion en précisant les attendus de l'implantation de la télémédecine ainsi que les objectifs de l'évaluation. Ils font le point dans un deuxième chapitre sur les expériences qui sont décrites dans la littérature internationale et qui présentent un intérêt en termes d'évaluation. Les expériences (françaises et québécoises), pour lesquelles les auteurs ont mené une observation directe sont synthétisées dans le troisième chapitre. Le quatrième chapitre décline quelques principes généraux d'évaluation sous la forme d'un guide d'aide à l'évaluation illustré par des exemples.

Mondada, L. (2004). "Téléchirurgie et nouvelles pratiques professionnelles : les enjeux interactionnels d'opérations chirurgicales réalisés par visioconférence." *Sciences Sociales Et Sante* **22**(1): 95-126, phot., enc.

La téléchirurgie est, par excellence, un des domaines dans lequel se pose la question de la mutation des pratiques professionnelles dans de nouveaux environnements technologiques. Pour y répondre, une analyse approfondie des pratiques médicales semble indispensable. Cet article propose donc une analyse détaillée des activités des équipes chirurgicales en salle d'opération. En se basant sur un corpus d'enregistrement vidéo d'opérations réalisées avec la collaboration à distance d'un expert dans le cadre d'un projet de téléchirurgie, l'auteur se penche plus particulièrement sur les modes d'organisation de l'interaction durant les opérations et sur la façon dont le recours aux nouvelles

technologies, la redéfinition des collectifs dans l'action à distance et la reconfiguration des espaces de travail s'articulent dans cette pratique professionnelle (Extrait du résumé d'auteur).

Morin, A., et al. (2000). "Télémédecine : Etat des lieux." Techniques Hospitalières(644): 40-42.

[BDSP. Notice produite par ENSP b00R0xl0. Diffusion soumise à autorisation]. Le terme de télémédecine est maintenant consacré pour désigner la télématique de santé. L'état de réceptivité de ce nouvel outil a sensiblement évolué, tant du côté du professionnel de santé que de celui du public qu'il s'agisse des patients ou des usagers. Une condition indispensable : développer des contenus de qualité correspondant réellement aux besoins et demandes des utilisateurs.

Ministère chargé de la Santé (2012). Le pacte territoire-santé pour lutter contre les déserts médicaux, Paris : MSSPS

http://www.social-sante.gouv.fr/IMG/pdf/12_engagements_-_pacte_Territoire-Sante_DP_VDef.pdf

L'accès de tous les Français sur l'ensemble du territoire à des soins de qualité est une priorité absolue pour le gouvernement. Depuis 5 ans, 2 millions de Français supplémentaires sont touchés par la désertification médicale. Les inégalités entre les territoires ne cessent d'augmenter. Les délais pour accéder à un médecin spécialiste sont de plus en plus longs. Pour faire face à cet enjeu majeur, la Ministre a présenté un « pacte territoire-santé », composé de 12 engagements et d'une méthode volontariste. Les 12 engagements proposés s'articulent autour de 3 objectifs : Changer la formation et faciliter l'installation des jeunes médecins, Transformer les conditions d'exercice des professionnels de santé, Investir dans les territoires isolés.

Ministère chargé de la Santé (2015). Pacte territoire santé 2, Paris : Ministère chargé de la Santé

<http://www.sante.gouv.fr/le-pacte-territoire-sante-pour-lutter-contre-les-deserts-medicaux,12793.html>

Le « pacte territoire santé 2 » propose des mesures innovantes pour s'adapter aux besoins des médecins et des territoires. Il se décline en 10 engagements autour de deux axes. Le premier axe s'attache à pérenniser et amplifier les actions menées depuis le Pacte territoire santé à savoir : développer les stages des futurs médecins en cabinet de ville; faciliter l'installation des jeunes médecins dans les territoires fragiles ; favoriser le travail en équipe, notamment dans les territoires ruraux et périurbains; assurer l'accès aux soins urgents en - de 30 minutes. Le second axe est centré sur l'innovation pour s'adapter aux besoins des professionnels et des territoires : augmenter de manière ciblée le numerus clausus régional pour l'accès aux études de médecine ; augmenter le nombre de médecins libéraux enseignants ; soutenir la recherche en soins primaires Innover dans les territoires ; mieux accompagner les professionnels de santé dans leur quotidien ; favoriser l'accès à la télémédecine pour les patients chroniques et pour les soins urgents ; soutenir une organisation des soins de ville adaptée à chaque territoire et à chaque patient

Normand, Y., et al. (2010). "Hôpital, patient, système d'information. Dossier." Techniques Hospitalières(721): 65-87, fig.

[BDSP. Notice produite par EHESP s9mDR0xp. Diffusion soumise à autorisation]. La 18ème journée nationale Athos qui est tenue à Pau en novembre 2009 a permis de rassembler 250 personnes autour du thème "Hôpital, patient, système d'information" et d'échanger sur les expérimentations et pratiques de plusieurs centres hospitaliers. Cet article nous en présente quelques extraits qui traitent de : - la politique de sécurité des systèmes d'information et la confidentialité des informations médicales - la plateforme "Télésanté Aquitaine" qui favorise les échanges ville-hôpital - l'évolution des systèmes d'information hospitaliers face aux territoires de santé et aux communautés hospitalières de territoire - l'informatisation du dossier patient au centre hospitalier de Mont-de-Marsan et à l'hôpital local de Mauléon-Soule - la mise en place de trois unités de dialyse médicalisée télésurveillée (UDMT) sur le territoire des Côtes d'Armor par le centre hospitalier de Saint-Brieuc.

Noury, N. r. (2005). "AILISA : plateformes d'évaluations pour des technologies de télésurveillance médicale et d'assistance en gérontologie." Gérontologie Et Société(113): 89-96, fig.

[BDSP. Notice produite par FNG 1R0xqRxz. Diffusion soumise à autorisation]. Le projet AILISA a pour objectif de mettre en place des plateformes pérennes pour l'évaluation de technologies de télésurveillance médicale et d'assistance en gérontologie. Les plateformes seront installées dans deux services gériatriques : l'un à l'hôpital Charles Foix (Ivry-sur-Seine) et l'autre au CHU La Grave (Toulouse), et dans deux appartements d'un foyer logement pour personnes âgées (Grenoble). Les sites d'évaluation disposeront de trois technologies mises au point dans les laboratoires de la recherche publique française : l'Habitat Intelligent pour la Santé (TIISAD), le vêtement de Télé-Assistance Médicale Nomade (VTAMN) et le robot déambulateur (MONIMAD). Il s'agit ici d'évaluer ces technologies sur les plans technologique, médical et aussi sur le plan de l'usage et de l'éthique.

Ohannessian, R., Dhote-Burger, P., Chauvin, F., Colin, C., Nighoghossian, N., Moulin, T. et Schott, A. M. (2019). "Health policy for telestroke in France: A retrospective description from 2003 to 2016." *Rev Neurol (Paris)* **175**(6): 390-395.

INTRODUCTION: Stroke is a public health priority in France. The use of telemedicine for stroke known as telestroke, is a safe and effective practice improving access to acute stroke care including thrombolysis. Telestroke is currently being implemented in France. The objective was to describe the public health policy supporting telestroke implementation in France. METHODS: An external ex-post evaluation of telestroke policy in France was conducted through a retrospective descriptive study from 2003 to 31(st) December 2016. Process, content, and actors of the health policy were described at a national level. The logical framework of the telestroke policy was described. The stages model of public policy from the 'Institut National de Sante Publique du Quebec' was used. RESULTS: Agenda setting was produced from 2003 to 2007. Policy formulation lasted from 2008 to 2009 with official reports on telemedicine, telehealth and stroke. The decision-making stage included the national stroke plan, the national telemedicine implementation strategy and an administrative document in 2012 that described the organization of telestroke implementation. Implementation in 2011 was initiated with dedicated funding and methodological resources. No dedicated evaluation of policy for telestroke was defined. CONCLUSIONS: Using a health policy model allowed to describe the policies supporting telestroke implementation in France and to highlight the need for better evaluation.

Paonessa, I. (1999). La télémédecine en périnatalité dans le contexte de "régionalisation des soins", Université de Paris I - Paris XI. Paris. FRA: 36 , 35 ann., tabl.

Pare, G., et al. (2009). Revue systématique des effets de la télésurveillance à domicile dans le contexte du diabète, des maladies pulmonaires et des maladies cardiovasculaires. Montreal AETMIS: 75 , tabl., annexes. https://www.inesss.qc.ca/fileadmin/doc/AETMIS/Rapports/Telesante/ETMIS2009_Vol5_No3.pdf

Vu la croissance des maladies chroniques, la hausse du vieillissement de la population et la politique du virage ambulatoire, un grand nombre de patients atteints de maladies chroniques pourraient bénéficier d'un suivi à distance à domicile au Québec. Parmi les maladies les plus fréquentes figurent le diabète, les maladies pulmonaires, l'insuffisance cardiaque et l'hypertension artérielle. Dans ce contexte, la question de l'efficacité d'une telle intervention se pose. La présente revue systématique se donne donc pour objectif de déterminer quels sont les effets associés à la télésurveillance à domicile. Ces effets seront examinés à la lumière des études ayant porté sur trois grandes catégories de maladies et leurs associations, soit le diabète (type 1, type 2 et gestationnel), les maladies pulmonaires (asthme et maladie pulmonaire obstructive chronique) ainsi que les maladies cardiovasculaires (insuffisance cardiaque et hypertension). L'évaluation explore également les conditions de réussite de ce mode de prestation des soins.

Pauchard, P., et al. (2008). "Télémédecine en Guyane." *Revue Hospitalière De France*(521): 42-44.

[BDSP. Notice produite par EHESP R0xtAnAF. Diffusion soumise à autorisation]. La Guyane est un grand département d'outre-mer (86 000 km) recouvert à 80% par la forêt équatoriale. Région côtière et villes concentrent les trois hôpitaux et les principales ressources de santé. À l'intérieur des terres, les ressources médicales sont plus modestes. Vingt-et-un postes de santé tenus par du personnel paramédical assurent la couverture sanitaire d'une population disséminée. Après une première phase d'expérimentation lancée en 2001, la Guyane s'est engagée dans l'élaboration d'un véritable réseau de

télé médecine qui permet de rompre l'isolement des populations et d'éviter des évacuations sanitaires coûteuses.

Peyron, C. et Wallut, L. (2016). "Tarification à l'activité et équilibre financier des prises en charge avec télé médecine : l'exemple du dispositif TéléAVC en Bourgogne." Journal De Gestion Et D'économie Médicales **34**(8): 415.

Peyron, C. et Wallut, L. (2016). "Tarification à l'activité et équilibre financier des prises en charge avec télé médecine : l'exemple du dispositif TéléAVC en Bourgogne." Journal De Gestion Et D'économie Médicales **34**(8): 415-429, tabl.

[BDSP. Notice produite par ORSRA R0x9ks8A. Diffusion soumise à autorisation]. Afin de contribuer aux réflexions sur un modèle économique pour la télé médecine, cette étude exploratoire analyse, du point de vue des établissements, les équilibres financiers des prises en charge au sein du dispositif bourguignon TéléAVC. Ce dispositif permet de fibrinolyser, à distance et avec la télé assistance d'une UNV, les patients victimes d'un accident vasculaire cérébral ischémique et accueillis dans des centres hospitaliers périphériques, dits hôpitaux requérants dans le dispositif. Nous avons mobilisé des données de microcosting (observation de 18 prises en charge) et exploité des données issues de 92 dossiers patients pour évaluer les coûts hospitaliers réels des prises en charge. Nous avons également collecté les données nécessaires au calcul des recettes perçues pour ces patients. Nous montrons que le coût de l'acte de fibrinolyse est identique dans l'UNV et dans les centres hospitaliers requérants. Pour un patient télé fibrinolyté, les centres hospitaliers requérants connaissent une perte financière (d'une valeur médiane de - 2234 euros) alors que l'UNV qui prend en charge le patient pour la surveillance post télé fibrinolyse a un solde financier positif (1624 euros). Dans ce dispositif de télé médecine, la T2A "favorise" les établissements requis. Du point de vue de la collectivité, la logique de financement de la T2A rend, hors transport et infrastructure, la prise en charge avec télé médecine plus coûteuse qu'une prise en charge conventionnelle. L'impact de la facturation au séjour et non au parcours est déterminant, la nécessité d'un modèle économique adéquat pour la télé médecine trouve ici des arguments quantifiés.

Pipame (2017). L'avenir du marché de la télé assistance et des services associés : prospective : rapport final, Paris : Ministère de l'économie et des finances Paris : Ministère des affaires sociales et de la santé

[BDSP. Notice produite par MIN-SANTE 8R0xlkE8. Diffusion soumise à autorisation]. Le marché de la télé assistance se porte plutôt bien mais la filière n'exploite pas pleinement son potentiel. L'étude présente quatre scénarios de développement. Pour aller vers les plus vertueux, les pouvoirs publics et les acteurs privés du secteur doivent ajuster leurs politiques. L'étude propose d'une part de structurer l'activité au niveau national et d'autre part de développer de nouveaux services.

Raully, A. (2013). "Dispositifs de rémunération de la télé médecine : de la diversité des propositions de contrats à la singularité du système de santé français." Journal De Gestion Et D'économie Médicales **31**(7-8): 473-486, tabl.

[BDSP. Notice produite par ORSRA pFJ7JR0x. Diffusion soumise à autorisation]. L'objectif de ce travail est d'apporter des éléments de compréhension au débat actuel concernant la forme que doit prendre la rémunération des actes de télé médecine pratiqués par les médecins libéraux. Depuis la reconnaissance juridique de la pratique en 2009, aucun compromis entre la tutelle et les représentants des médecins n'a été trouvé. La question principale est donc de savoir sur quels éléments repose le débat. Si les pouvoirs publics proposent de s'appuyer sur les expériences étrangères réussies de déploiement de la télé médecine, le corps médical préfère voir la télé médecine s'intégrer dans des contrats existants. Ainsi, deux grandes tendances peuvent être mises en évidence. Dans un premier cas les recommandations faites pour le déploiement de la télé médecine préconisent une réorganisation profonde du mode de rémunération et d'organisation du système de santé. L'objectif étant avant tout de réduire l'asymétrie d'information entre les acteurs du système. Dans un second cas il est proposé de mettre en application des réformes limitées mais suscitant l'adhésion d'un plus grand nombre de médecins en vue de ne pas dégrader leurs représentations de la profession. (Résumé auteur).

Richard, R. (2010). "Grand âge : la télémédecine comme remède aux difficultés de déplacement." Concours Médical **132**(12): 492-493.

[BDSP. Notice produite par EHESP 8R0x7lpJ. Diffusion soumise à autorisation]. L'étude PLEIAD, réalisée par le Gérontopôle de Toulouse, confirme que les hospitalisations répétées des personnes âgées résidant en établissement entraînent une fragilisation accrue de ces personnes et représentent un risque d'augmentation de leur dépendance. Parmi les solutions mises en avant pour éviter les hospitalisations, figure le développement de la télémédecine, comme le montre le projet Télégéria à Paris qui a mis en place des téléconsultations en gériatrie à l'hôpital Européen Georges-Pompidou.

Richard, S. (2015). "AVC : premiers résultats concluants pour la télé-expertise lorraine." Revue Hospitalière De France(562): 75-.

[BDSP. Notice produite par EHESP R0xA98mC. Diffusion soumise à autorisation]. Le pronostic de l'accident vasculaire cérébral ischémique, en termes de survie et de handicap, dépend en partie de la rapidité de réalisation des évaluations cliniques et radiologiques. Ces investigations peuvent conduire à la prescription d'un traitement thrombolytique visant à restaurer la perfusion cérébrale. Plus ce traitement est administré tôt et plus son bénéfice est important pour le patient. Le risque de complications gravissimes - qui lui est inhérent - s'en trouve considérablement réduit. Un modèle d'expertise et de traitement à distance a été mis en place en Lorraine sous l'égide de l'agence régionale de santé et du service de neurologie du CHRU de Nancy.

Riou-Comte, N., et al. (2017). "Implementation and Evaluation of an Economic Model for Telestroke: Experience from Virtuall, France." Front Neurol **8**: 613.

Background: Telestroke is recognized as a safe and time-efficient way of treating stroke patients. However, admission centers (spokes) are subject to financial charges which can make them reluctant to join the system. We implemented and assessed an economic model supporting our telestroke system, Virtuall, France, which includes one expert center (hub) and six spokes. Methods: The model is based on payment for the expertise provided by the hub, distribution of charges related to telemedicine according to the fees perceived by the spokes, and transfer of patients between the spokes and the hub. We performed a cost-benefit analysis for all patients included in Virtuall from January 2014 to December 2015 to assess the economic balance in each center. Results: 321 patients were prospectively included in the study. Application of the economic model resulted in overall financial balance with funding of a dedicated medical service in the hub, and reduced costs directly related to telestroke by an average of 10% in the spokes. The conditions generating the highest costs for the spokes were: a patient returning from the hub for re-hospitalization (mean cost of \$1,995/patient); management of patients treated by intravenous thrombolysis without transfer to the hub (mean cost of \$2,075/patient). The most favorable financial condition for the spokes remained simple transfer of patients to the hub and no return (mean cost of \$329/patient). Conclusion: We describe an economic model which can be applied to any telestroke system to ensure the optimal balance between hub and spoke centers.

Robin, J.-Y. (2010). "Télémédecine : un rôle clé pour l'ASIP Santé." Revue Hospitalière De France(532): 17-18, carte.

[BDSP. Notice produite par EHESP CrFR0xJs. Diffusion soumise à autorisation]. Qu'il s'agisse du rapport Simon/Acker, du livre blanc de l'Ordre des médecins ou du rapport Gagneux sur les systèmes d'information de santé, le constat est partagé sur les opportunités que la télémédecine peut offrir à l'amélioration de la prise en charge et, par conséquent, à celle de la qualité des soins. Focus sur cette nouvelle pratique médicale qui connaîtra, en 2010, un véritable essor grâce à un cadre réglementaire abouti, et sur le rôle de l'ASIP Santé en la matière.

Roncari, J.-C. (2010). "Gérontellim : le réseau limousin de télémédecine gériatrique." Revue Hospitalière De France(532): 47-48, graph.

[BDSP. Notice produite par EHESP 8GBIR0xt. Diffusion soumise à autorisation]. L'association pour la GERONTologie et TELémédecine en LIMousin (Gérontellim) est née en août 2009 de la volonté de professionnels de santé. Objectif : développer la recherche et promouvoir la pratique médicale dans les domaines où la télémédecine apporte une valeur ajoutée à la prise en charge gériatrique des patients.

Rumeau, P., et al. (2007). "La télémédecine directe : de la démonstration dans le cadre du projet européen Healthware à la réflexion organisationnelle." Techniques Hospitalières(701): 27-30.

[BDSP. Notice produite par ENSP R0xeAFhY. Diffusion soumise à autorisation]. Le projet Healthware, financé dans le cadre du sixième projet cadre européen dans le chapitre aéronautique et espace, fait le lien entre des besoins de santé publique, le développement économique d'une région et la recherche et développement en matière d'utilisation des satellites. Il regroupe, sous la bannière fédératrice de l'Institut européen de télémédecine et d'Alcatel Alenia Space, des praticiens de terrain (médecins, techniciens, directeurs), le préfet et des élus locaux du département des Hautes-Pyrénées. Les sites locaux de démonstration ont été choisis en fonction de leur pertinence dans le tissu socio-économique local. A Luz-Saint-Sauveur, un cabinet de médecins traitants a été directement connecté à une maison de retraite dont ils suivent les résidents. A Lannemezan et Bagnères de Bigorre, un centre médico-psychologique (CMP) est directement connecté au service d'hospitalisation du secteur psychiatrique correspondant.

Schaefer, E., et al. (2015). "Obtaining reimbursement in France and Italy for new diabetes products." J Diabetes Sci Technol 9(1): 156-161.

Manufacturers launching next-generation or innovative medical devices in Europe face a very heterogeneous reimbursement landscape, with each country having its own pathways, timing, requirements and success factors. We selected 2 markets for a deeper look into the reimbursement landscape: France, representing a country with central decision making with defined processes, and Italy, which delegates reimbursement decisions to the regional level, resulting in a less transparent approach to reimbursement. Based on our experience in working on various new product launches and analyzing recent reimbursement decisions, we found that payers in both countries do not reward improved next-generation products with incremental reimbursement. Looking at innovations, we observe that manufacturers face a challenging and lengthy process to obtain reimbursement. In addition, requirements and key success factors differ by country: In France, comparative clinical evidence and budget impact very much drive reimbursement decisions in terms of pricing and restrictions, whereas in Italy, regional key opinion leader (KOL) support and additional local observational data are key.

Sedkaoui, K., et al. (2015). "Efficiency of a phone coaching program on adherence to continuous positive airway pressure in sleep apnea hypopnea syndrome: a randomized trial." BMC Pulm Med 15: 102.

BACKGROUND: Continuous Positive Airway Pressure (CPAP) remains the reference treatment for moderate to severe forms of the Sleep Apnea/Hypopnea Syndrome (SAHS). Compliance to the treatment appears to be a key factor to improving health status of these patients. METHODS: We conducted a multicenter, prospective, randomized, controlled, parallel group trial of standard support completed or not within 3 months of coaching sessions for newly diagnosed SAHS patients starting CPAP therapy. This study has been recorded by AFSSAPS with the RCB number: 2009-A01127-50 and received favourably by the Human Studies Committee in France. The coaching session consisted of 5 sessions of telephone-based counselling by competent staff. The primary outcome was the proportion of patients using CPAP more than 3 h per night for 4 months; the secondary outcome was mean hours of CPAP usage in the 2 groups. RESULTS: Three hundred and seventy-nine patients fulfilled the inclusion criteria and were randomized. The percentage of patients using CPAP more than 3 h per night for 4 months was 65 % for the standard support group and 75 % for the coached group. This difference reached a statistical significance ($\chi^2 = 3.97$). The mean CPAP usage was increased in the coached group versus standard group. A difference of 26 min was observed (4 h34+/-2 h17 and 4 h08+/-2 h25 respectively, $p = 0.04$). CONCLUSION: This study shows that SAHS patients who benefit from phone coaching are statistically more compliant to CPAP than a standard support group is. A

simple phone coaching procedure based on knowledge of the disease and reinforcement messages about treatment benefits helps to improve CPAP adherence in SAHS patients. TRIAL REGISTRATION: NCT02435355.

Simon, P. (2018). "La télémédecine appliquée à l'hémodialyse ou la machine connectée." Bulletin De L'Académie Nationale De Médecine 202(3-4): 559-571.
<http://www.academie-medecine.fr/la-telemedecine-appliquee-a-lhemodialyse-ou-la-machine-connectee/>

Au XXI^e siècle, l'insuffisance rénale est une maladie chronique qui touche plusieurs millions de personnes, en France et dans le monde. Sa prévalence dans la population générale augmente avec l'allongement de l'espérance de vie qui marque les pays développés et qui commence à apparaître dans les pays en voie de développement. L'hémodialyse chronique est un traitement qui a sauvé au 20^e siècle de nombreux enfants ou jeunes adultes dont les reins étaient détruits par plusieurs agents infectieux, toxiques et par des accès d'hypertension maligne dus à des hypertensions non traitées. Ces causes ont été maîtrisées grâce aux mesures d'hygiène, les agents pharmacologiques anti-infectieux ou protecteurs du système cardio-vasculaire. Les causes de l'insuffisance rénale terminale aujourd'hui dominées par les maladies dégénératives du vieillissement que sont le diabète et la maladie vasculaire chronique. Le traitement par hémodialyse ne peut pas être toujours relayé par la transplantation rénale. De nombreux patients restent en hémodialyse chronique jusqu'à leur décès. Il importe d'adapter les conditions du traitement à leur vie sociale pour que celles-ci soient les meilleures possibles. C'est l'objectif de la télé dialyse qui consiste à réaliser les séances d'hémodialyse au plus proche du domicile, voire au domicile, tout en assurant la surveillance à distance des séances par la télémédecine. Les pratiques de télémédecine qui caractérisent la télé dialyse sont la télésurveillance médicale, la téléconsultation et la téléexpertise. Le moniteur d'hémodialyse est connecté à la plateforme et envoie en quasi temps réel les principaux paramètres biologiques et cliniques de la séance, lesquels permettent au médecin néphrologue du centre ambulatoire d'évaluer la qualité de la séance. Le système de télé dialyse est construit avec des logiciels spécifiques de mesure des différents paramètres de surveillance et les moyens de communication par vidéotransmission.

Simon, O. et Acker, D. (2008). La place de la télémédecine dans l'organisation des soins. Paris Mssps: 160 , tabl., fig., cartes, ann.

Ce rapport concerne l'organisation des soins par la télémédecine, acte médical à distance tel qu'il est défini dans la loi du 14 août 2004. Après avoir défini le cadre déontologique et juridique de la télémédecine et son impact sur l'exercice professionnel (1), le rapport fera l'état des lieux des réalisations et des projets en France, en Europe et dans le Monde (2), analysera les enjeux à court et moyen termes, en déclinant les besoins par grands types de pathologies et par modes d'activité de soins (3), identifiera les principaux freins à son développement (4), fera des recommandations pour que sa mise en œuvre soit la plus efficiente possible afin d'apporter une réponse adaptée aux attentes des patients et des professionnels de santé (5).

Simon, P. (2005). "La télé dialyse. Une application de la télémédecine à la surveillance médicale de séances d'hémodialyse réalisées à distance." Techniques Hospitalières(692): 60-64, phot.

[BDSP. Notice produite par ENSP Mq43R0xx. Diffusion soumise à autorisation]. La télé dialyse, devenue légale par la loi du 14 août 2004 de l'assurance maladie (article 12), est l'usage de la télémédecine pour la réalisation à distance de l'acte médical de surveillance des insuffisants rénaux traités dans un centre de dialyse éloigné du centre de référence. Elle est expérimentée depuis l'été 2001 entre les centres hospitaliers de Saint-Brieuc et de Lannion. Le but de cet article est de faire le point sur le développement actuel et à venir de cette méthode, notamment pour faire face au problème de la démographie médicale néphrologique.

Simon, P. (2010). "Télémédecine : un levier pour la restructuration de l'offre de soins." Revue Hospitalière De France(532): 12-16, graph.

[BDSP. Notice produite par EHESP R0xFComt. Diffusion soumise à autorisation]. Co-auteur du rapport sur la place de la télémédecine dans l'organisation des soins paru en novembre 2008, Pierre Simon présente ici les nouvelles pratiques médicales et paramédicales par télémédecine. Il en définit les actes, analyse les responsabilités engagées, soulignant celles de nouveaux acteurs : le ou les tiers technologiques qui réalisent les dispositifs techniques de télémédecine. Il décrit les nouvelles organisations des soins bénéficiaires de ces pratiques : la gradation des soins et la télésurveillance médicale à domicile qui, via la télémédecine, se révèlent un atout pour la radiologie publique, les patients de toutes pathologies (MCO, chroniques, âgés et handicapés pensionnaires de maisons de retraite et d'EHPAD), et la collaboration pluriprofessionnelle.

Simon, P. (2011). "Télémédecine. Impacts du décret, évolutions, perspectives, enjeux." Revue Hospitalière De France(539): 68-74, ill.

[BDSP. Notice produite par EHESP R0xF8FBE. Diffusion soumise à autorisation]. La parution du décret le 9 octobre 2010 relatif à la télémédecine définit les actes de télémédecine et les conditions de mise en œuvre de ces différentes applications. L'auteur détaille les impacts du décret sur l'exercice médical (définition de la télémédecine, qualité et sécurité du dispositif, relations avec le patient, obligations du médecin...) et présente les organisations pilotes opérationnelles en France, qui devront être mises en conformité avant le 20 avril 2012. Enfin, les enjeux pour les soins primaires et pour les soins de second recours sont exposés, l'accent étant mis sur la continuité des soins.

Simon, P. (2013). "Ressources humaines et télémédecine." Revue Hospitalière De France(554): 12-18, tabl., graph., fig.

L'utilisation de la télémédecine impose une adaptation des organisations de soins. En modifiant ces organisations, la pratique de la télémédecine impacte directement les ressources humaines. Dans cet article, les ressources humaines en télémédecine sont analysées sous trois aspects : pratiques professionnelles, nouvelles organisations professionnelles, coopérations entre professionnels de santé.

Simon, P. (2015). Télémédecine : enjeux et pratiques, Brignais : Editions Le Coudrier
<http://www.edition-lecoudrier.fr/produit/7/9782919374069/Telemedecine%20-%20Enjeux%20et%20pratiques>

En médecine comme dans d'autres secteurs, les technologies modernes de communication ont ouvert de nouvelles possibilités. Grâce à elles, de nombreuses pratiques à distance ont vu le jour depuis les années 1990. Quelles sont ces pratiques ? Ont-elles fait leurs preuves ? Qu'apportent-elles aux patients, aux soignants et à la santé publique ? Feront-elles bientôt partie de notre quotidien ? Ce livre offre un point complet sur le sujet. Après avoir défini le champ et précisé les termes et les enjeux de la télémédecine, l'auteur raconte l'histoire des pays pionniers, dont fait partie la France. Il présente ensuite ce qu'il faut savoir des pratiques de télémédecine : la politique nationale, les cinq actes reconnus depuis 2010, les responsabilités engagées et la façon de mettre en œuvre un projet. Il termine l'ouvrage en détaillant les applications développées dans chaque spécialité et en présentant une sélection d'articles scientifiques pour chacune d'entre elles. Un ouvrage de référence pour tous ceux qui s'interrogent sur les enjeux et les pratiques de la télémédecine.

Simon, P. (2015). "Télémédecine et parcours de soins." Revue Hospitalière De France(566): 14-20.

[BDSP. Notice produite par EHESP rjo7BR0x. Diffusion soumise à autorisation]. Cet article se réfère à ce que la Haute Autorité de Santé (HAS) écrivait sur le parcours de soins en 2012. Il analyse successivement la place du médecin traitant dans le parcours de soins d'une maladie chronique, l'apport de la télémédecine pour les différents acteurs professionnels médicaux et non médicaux qui interviennent dans ce parcours, ainsi que l'apport de la télémédecine pour les patients pris en charge. Il apporte, enfin, des exemples de parcours de soins bénéficiant de la télémédecine. (introd.).

Simon, P. (2017/09-10). "La télémédecine dans la loi de financement de la sécurité sociale pour 2017." Techniques Hospitalières(765): 6p., ann.

Le programme Expérimentations de télémédecine pour l'amélioration du parcours en santé (Etapas) préfigure le financement des pratiques professionnelles de télémédecine dans le droit commun de la sécurité sociale. Cet article présente ce programme initié dans la Loi de financement de la sécurité sociale pour 2017.

Simon, P., et al. (2013). "Dossier RH. Télémédecine : quels impacts sur les pratiques soignantes ?" Revue Hospitalière De France(554): 12-30, ill.

[BDSP. Notice produite par EHESP 99R0xooop. Diffusion soumise à autorisation]. Le dossier permet de mesurer l'impact sur la gestion des ressources humaines que peut avoir l'introduction de la télémédecine dans les pratiques médicales, à travers quatre contributions : la première montre d'abord que la télémédecine impose une adaptation des organisations de soins. L'article analyse les ressources humaines en télémédecine sous trois aspects : les pratiques professionnelles, les organisations professionnelles nouvelles, les coopérations entre professionnels de santé, favorisées par la télémédecine. La deuxième contribution, intitulée "télésurveillance médicale à domicile, quels apports patients et professionnels ?", offre un témoignage de mise en place de pratique de la télémédecine au centre hospitalier de Saint-Yrieix, en Haute-Vienne. Le troisième article présente l'unité d'enseignement télémédecine proposée par l'université Picardie Jules Verne dédiée aux étudiants en médecine. Enfin, le dernier article, qui s'intitule "téléfibrinolyse en Bourgogne, une réussite organisationnelle au bénéfice des patients atteints d'AVC", illustre le bénéfice que peut représenter la pratique de la télémédecine pour des territoires ruraux où la densité médicale reste faible.

Simon, P., et al. (2010). "Dossier. Télémédecine, l'heure "H" ?" Revue Hospitalière De France(532): 12-36, graph., tabl.

[BDSP. Notice produite par EHESP 7R0xFII9. Diffusion soumise à autorisation]. Au sommaire du dossier : Télémédecine : un levier pour la restructuration de l'offre de soins - Un rôle clé pour l'ASIP Santé - Télémédecine et pratique médicale collaborative : enjeux et préalables - Apports de la télémédecine dans la gradation des soins - Maladies chroniques cardiovasculaires et métaboliques : apports de la télémédecine - Place et perspectives de la télémédecine en Guyane - Santé en ligne : nouvelles étapes européennes.

Suarez, C. (2002). "La télémédecine : quelle légitimité d'une innovation radicale pour les professionnels de santé ?" Revue De L'ires (La)(39): 157-186.

<http://www.ires.fr/index.php/publications-de-l-ires/item/2753-la-telemedecine-quelle-legitimite-d-une-innovation-radicale-pour-les-professionnels-de-sante>

Après une définition de la télémédecine extraite des études de l'Organisation Mondiale de la Santé, cet article dresse un historique de l'émergence de la télémédecine en Europe. Il fait ensuite un bilan des expériences menées dans certains pays européens : France, Italie, Royaume-Uni, Portugal?

Suarez, C. (2008). "Quelle organisation sanitaire alternative pour le système sanitaire français ?" Revue De L'ires (La)(59): 41-74.

<http://www.ires-fr.org/IMG/File/R59-2.pdf>

Les éléments d'organisation alternative exposés ici reposent sur un principe stratégique fondamental : la responsabilisation privilégiée des instances politiques dans la mise en œuvre d'une politique de santé publique. Il nous paraît en effet essentiel de re-politiser (au sens noble du terme) les enjeux stratégiques d'une politique de santé et de clairement distinguer ce qui est de l'ordre de l'expertise technique de ce qui est de l'ordre du choix politique : quelle stratégie de la santé, quels objectifs, quels moyens, quels résultats escomptés ? Voici donc quelques propositions structurelles à débattre.

Talbot, L. R. et Vincent, C. (2005). "Les technologies dans le soutien à domicile des personnes âgées : d'une expérience de télésurveillance vers un programme de télésoins à domicile." Gérontologie Et Société(113): 51-61, fig.

[BDSP. Notice produite par FNG dxASTROx. Diffusion soumise à autorisation]. Cet article présente les résultats d'une étude ayant pour but d'évaluer les effets de l'utilisation d'une nouvelle technologie de surveillance sur les habitudes et qualité de vie des personnes âgées et de leurs proches aidants. Ils montrent que l'utilisation de cette technologie n'a pas d'effet sur la qualité de vie et sur l'autonomie des personnes âgées mais qu'elle réduit la fréquence des hospitalisations et l'anxiété des proches. Les auteurs décrivent ensuite les avantages attendus d'un nouveau programme de télésoins à domicile.

Thai-Duc, A.-T. (2017). "CyberCantal Télémédecine : Un programme au service des résidents d'Ehpad." Revue Hospitalière De France(575): 26-28.

[BDSP. Notice produite par EHESP p8R0x7Ht. Diffusion soumise à autorisation]. Le conseil départemental du Cantal expérimente la télémédecine sur son territoire depuis 2014. Pour tester ces nouvelles façons d'apporter des soins, notamment aux personnes rencontrant des difficultés à se déplacer, cinq établissements ont été identifiés : deux Ehpad, deux foyers d'accueil médicalisés et une clinique. Tous sont équipés d'un chariot de téléconsultation, d'un logiciel de télémédecine, d'une connexion à la plateforme régionale de télémédecine par liaison internet dédiée. Leurs patients et résidents accèdent ainsi à des soins de second recours auprès des spécialistes du centre hospitalier Henri-Mondor d'Aurillac. (R.A.).

Thilly, N., et al. (2017). "Cost-effectiveness of home telemonitoring in chronic kidney disease patients at different stages by a pragmatic randomized controlled trial (eNephro): rationale and study design." BMC Nephrol **18**(1): 126.

BACKGROUND: Home telemonitoring has developed considerably over recent years in chronic diseases in order to improve communication between healthcare professionals and patients and to promote early detection of deteriorating health status. In the nephrology setting, home telemonitoring has been evaluated in home dialysis patients but data are scarce concerning chronic kidney disease (CKD) patients before and after renal replacement therapy. The eNephro study is designed to assess the cost effectiveness, clinical/biological impact, and patient perception of a home telemonitoring for CKD patients. Our purpose is to present the rationale, design and organisational aspects of this study. METHODS: eNephro is a pragmatic randomised controlled trial, comparing home telemonitoring versus usual care in three populations of CKD patients: stage 3B/4 (n = 320); stage 5D CKD on dialysis (n = 260); stage 5 T CKD treated with transplantation (n= 260). Five hospitals and three not-for-profit providers managing self-care dialysis situated in three administrative regions in France are participating. The trial began in December 2015, with a scheduled 12-month inclusion period and 12 months follow-up. Outcomes include clinical and biological data (e.g. blood pressure, haemoglobin) collected from patient records, perceived health status (e.g. health related quality of life) collected from self-administered questionnaires, and health expenditure data retrieved from the French health insurance database (SNIIRAM) using a probabilistic matching procedure. DISCUSSION: The hypothesis is that home telemonitoring enables better control of clinical and biological parameters as well as improved perceived health status. This better control should limit emergency consultations and hospitalisations leading to decreased healthcare expenditure, compensating for the financial investment due to the telemedicine system. TRIAL REGISTRATION: This study has been registered at ClinicalTrials.gov under NCT02082093 (date of registration: February 14, 2014).

Thorigny, M. (2018). "Le développement de la télémédecine, une question de financement ? Un éclairage par l'analyse lexicométrique du discours parlementaire." Journal De Gestion Et D'économie Médicales **36**(4): 181-200.

<https://www.cairn.info/revue-journal-de-gestion-et-d-economie-medicales-2018-4-page-181.htm>

La télémédecine est une activité qui a des difficultés à se développer et ses modalités de financements évoluent rapidement, parfois dans des sens contradictoires, ce qui peut apparaître comme un élément de blocage. À partir d'une analyse lexicométrique des discours parlementaires nous identifions différents pics d'activité législative sur la notion de télémédecine : en 2009, avec la loi HPST, fin 2013 avec la LFSS pour 2014 et fin 2017 avec la LFSS pour 2018. L'objectif est de montrer comment évoluent, à ces moments clés, les questions autour du financement de l'activité. Quatre dimensions du

financement qui ont un impact sur le développement de la pratique sont alors mises en évidence : la maîtrise des dépenses de santé, le financement des acteurs, le financement des équipements et les modalités de rémunération des actes.

Varroud-Vial, M. (2012). "Dossier : Le traitement du diabète de type 2 par l'insuline." Concours Médical **134**(6): 439-459.

[BDSP. Notice produite par ORSRA 9GR0x9CI. Diffusion soumise à autorisation]. Ce dossier permet de mettre en évidence les enjeux que représente le traitement par insuline pour les médecins généralistes. L'étude ENTRED réalisée en 2007 a montré que le contrôle métabolique est difficile et les complications fréquentes. La prescription de l'insuline soit par le médecin généraliste soit par le diabétologue se heurte à l'insulinorésistance psychologique et à l'hétérogénéité du diabète type 2. Ainsi, l'éducation thérapeutique du patient est une étape indispensable lors du passage à l'insulinothérapie et pour les personnes âgées, il peut être facilité grâce à l'intervention d'une infirmière.

Vayssette, P. (2011). "Télésanté : deux ans après le rapport Laborde." Réseaux Sante & Territoire(40): 28-29.

Deux ans après la parution de son rapport sur la télésanté, Pierre Laborde fait un bilan de son développement actuel en France. Si certaines réalisations concrètes se sont mises en place, notamment en télésurveillance (suivi du diabète) et en télé-assistance, il existe encore des freins juridiques ainsi que des réflexions en cours sur les modes de rémunération.

Vercauteren, R., et al. (2000). Une architecture nouvelle pour l'habitat des personnes âgées, Ramonville-Saint-Agne : Erès

Définir une nouvelle forme de sociabilité à travers la notion de « chez soi » demande de se pencher sur de multiples expériences qui, à travers l'Europe, ont marqué de leur originalité l'évolution de l'habitat des personnes âgées. La montée d'un recours à l'informatique, l'expérience de la domotique ou encore l'utilisation de nouveaux matériaux changent totalement les conceptions de l'architecture. L'ensemble de ces éléments est étudié dans cet ouvrage, qui interroge la naissance d'une nouvelle conception " pluriâge " pour les résidences de demain. Dépassant les anciens modèles, qui aboutissent trop souvent à isoler les personnes âgées, les auteurs donnent des exemples de réalisations (petites unités de vie ou grandes structures), qui permettent aux différents âges de la vie de cohabiter en une même résidence. Ils proposent également la création d'aires d'accueil qui associent le maintien à domicile et l'institution dans l'organisation de parcours pour les personnes démentes.

Viens-Bitker, C., et al. (2000). "Télémédecine." Revue Européenne De Technologie Biomédicale (Rbm) **21**(5): 265-328, tabl., graph.

Depuis 1990, la télémédecine a progressivement pris son essor. Elle s'organise aujourd'hui autour de trois thèmes majeurs : les réseaux et filières, c'est-à-dire la communication entre professionnels aboutissant à la mise en commun de bases de données et de connaissances ; la télé-expertise à distance, synchrone ou asynchrone ; et plus récemment, la télémédecine adressée directement aux patients ou au grand public, pour les actions de prévention, en particulier au travers des « portails santé ». Les articles originaux présentés dans ce numéro témoignent de l'activité de nombreuses équipes de recherche de l'Association Française pour l'Informatique Médicale (AIM) travaillant dans le domaine, et de l'intérêt suscité par les nouvelles technologies d'information et de communication en informatique médicale. On trouve, en outre, dans ce fascicule deux articles relatifs à la trajectoire des patients.

Vigneron, E., et al. (2003). Santé et territoires, une nouvelle donne, La Tour d'Aigues : Editions de l'Aube Paris : Datar

L'actualité politique sur la décentralisation et la " régionalisation expérimentale " a une incidence sur la recomposition territoriale de l'offre de soins. Cette approche territoriale de la santé est abordée sous les aspects suivants : démographie médicale, intercommunalité hospitalière, politique du

médicament, démarche qualité, transport sanitaire, réseaux de soins, télémédecine, systèmes d'information, développement de grands pôles régionaux de recherche et valorisation en biotechnologies.

Vincent, W. (2001). "L'explosion de la télémédecine : les radiologues sont présents." Lettre Du Médecin Radiologue(356): 15-16, carte.

Williams-Sossler, C., et al. (2016). "Territorialités. Dossier." Revue Hospitalière De France(572): 18-30.

[BDSP. Notice produite par EHESP 88R0xqEp. Diffusion soumise à autorisation]. Ce dossier s'intéresse à l'organisation territoriale des soins dans différents domaines (psychiatrie, chimiothérapie, anesthésie.) au regard notamment de la mise en œuvre des groupements hospitaliers de territoire et du développement de la télémédecine. Il est composé de quatre contributions qui abordent les points suivants : - le devenir de la psychiatrie dans le cadre du projet médical partagé en Vendée - les prises en charge des chimiothérapies en territoire Nord-Est réunionnais - l'installation pilote de quatre dispositifs de télémédecine sur les territoires du Artois Hainaut Cambrésis (prise en charge de l'AVC), aux Hospices civils de Lyon (téléconsultation préanesthésique), au Centre hospitalier de Rouvray près de Rouen (télépsychiatrie) et au CHU de Caen (télé-suivi des patients insuffisants cardiaques).

Williatte-Pellitteri, L. et Flauraud-Grandjean, V.-A. (2012). "Télémédecine et responsabilités juridiques." Revue Hospitalière De France(549): 62-66.

[BDSP. Notice produite par EHESP G9sBR0xA. Diffusion soumise à autorisation]. La loi Hôpital, patients, santé, territoire a donné pour la première fois un cadre juridique à l'exercice de l'art médical via la télémédecine. Le décret de 2010 précise ce cadre en identifiant les obligations de ses organisateurs et acteurs. Une question se pose : la télémédecine doit-elle être perçue comme une nouvelle source de responsabilité juridique pour les organisateurs ou les professionnels de santé qui l'exercent ?

Wolf-Thal, C. et Coatanea, P. (2018). Pharmacie connectée et télépharmacie : c'est déjà demain ! Livre vert. Paris CNOP: 82.

<http://www.ordre.pharmacien.fr/Communications/Publications-ordinales/Livre-vert-Pharmacie-connectee-et-telepharmacie>

Cette publication traite de l'impact du numérique sur les métiers de la pharmacie et leur nécessaire évolution. Les douze propositions formulées dans le cadre de la stratégie nationale de santé 2022 s'organisent autour de trois axes majeurs : les nouveaux services aux patients, le renforcement de la coordination des soins et la maîtrise des données et des algorithmes.

Zannad, F., et al. (2014). "Telemedicine: what framework, what levels of proof, implementation rules." Therapie **69**(4): 339-354.

The concept of telemedicine was formalised in France in the 2009 "Hospital, patients, health territories" (loi hospital, patients, santé, territoire) law and the 2010 decree through which it was applied. Many experiments have been carried out and the regulatory institutions (Ministry, Regional Health Agency [Agence regionale de sante, ARS], French National Health Authority [Haute autorite de sante, HAS], etc.) have issued various guidance statements and recommendations on its organisation and on the expectations of its evaluation. With this background, the round table wanted to produce recommendations on different areas of medical telemonitoring (the role of telemonitoring, the regulatory system, the principles for assessment, methods of use and conditions for sustained and seamless deployment). Whilst many studies carried out on new medical telemonitoring approaches have led to the postulate that it offers benefit, both clinically and in terms of patient quality of life, more information is needed to demonstrate its impact on the organisation of healthcare and the associated medico-economic benefit (criteria, methods, resources). Similarly, contractual frameworks for deployment of telemonitoring do exist, although they are complicated and involve many different stakeholders (Director General for the Care Supply [Direction générale de l'offre de soins, DGOS], ARS,

HAS, Agency for Shared Health Information Systems [Agence des systemes d'information partages de sante, ASIP], French National Data Protection Commission [Commission nationale informatique et libertes, CNIL], French National Medical Council [Conseil national de l'Ordre des medecins, CNOM], etc.) that would benefit from a shared approach and seamless exchange between the partners involved. The current challenge is also to define the conditions required to validate a stable economic model in order to promote organisational change. One topical issue is placing the emphasis on its evaluation and operation. Access to patient data, particularly data from the health insurance funds and the use of these data, may enable the process to be more effective. In addition, the budgetary non-fungibility of the various financial envelopes for the different areas of work, restricts the consolidation of financial impact. Funding methods will need to be adapted to this new distribution of roles, both at the centre of the healthcare system and in the industrial ecosystem. All of these changes will help the leaders of our healthcare system to bring this new ambition closer to all of the people working in the health economy.

ÉTUDES EUROPEENNES

Aarnio, P., et al. (2000). "A new method for surgical consultations with videoconference." Annales Chirurgiae Et Gynaecologiae(89): 336-340, 332 tabl.

Agbakoba, R., et al. (2016). "Implementation factors affecting the large-scale deployment of digital health and well-being technologies: A qualitative study of the initial phases of the 'Living-It-Up' programme." Health Informatics J **22**(4): 867-877.

Little is known about the factors which facilitate or impede the large-scale deployment of health and well-being consumer technologies. The Living-It-Up project is a large-scale digital intervention led by NHS 24, aiming to transform health and well-being services delivery throughout Scotland. We conducted a qualitative study of the factors affecting the implementation and deployment of the Living-It-Up services. We collected a range of data during the initial phase of deployment, including semi-structured interviews (N = 6); participant observation sessions (N = 5) and meetings with key stakeholders (N = 3). We used the Normalisation Process Theory as an explanatory framework to interpret the social processes at play during the initial phases of deployment. Initial findings illustrate that it is clear - and perhaps not surprising - that the size and diversity of the Living-It-Up consortium made implementation processes more complex within a 'multi-stakeholder' environment. To overcome these barriers, there is a need to clearly define roles, tasks and responsibilities among the consortium partners. Furthermore, varying levels of expectations and requirements, as well as diverse cultures and ways of working, must be effectively managed. Factors which facilitated implementation included extensive stakeholder engagement, such as co-design activities, which can contribute to an increased 'buy-in' from users in the long term. An important lesson from the Living-It-Up initiative is that attempting to co-design innovative digital services, but at the same time, recruiting large numbers of users is likely to generate conflicting implementation priorities which hinder - or at least substantially slow down - the effective rollout of services at scale. The deployment of Living-It-Up services is ongoing, but our results to date suggest that - in order to be successful - the roll-out of digital health and well-being technologies at scale requires a delicate and pragmatic trade-off between co-design activities, the development of innovative services and the efforts allocated to widespread marketing and recruitment initiatives.

Andersson, N., et al. (2017). "[Referral with images--equitable and cost-effective care]." Lakartidningen **114**.

This study evaluates the use of teledermatology at Norrland University Hospital in Northern Sweden between 2009 and 2014. In total, there were 27 198 incoming referrals. Of these, 1504 had photo attachments, and could be answered directly without a face-to-face appointment. Most of these referrals (73%) came from health care providers more than 100 kilometres away and 71% were answered within a week. Patients received care sooner and saved both time and money by less travelling. Teledermatology lead to less delay to a face-to-face appointment for patients where teledermatology was not an option.

Andreassen, H. K., et al. (2015). "Survival of the project: a case study of ICT innovation in health care." *Soc Sci Med* **132**: 62-69.

From twenty years of information and communication technology (ICT) projects in the health sector, we have learned one thing: most projects remain projects. The problem of pilotism in e-health and telemedicine is a growing concern, both in medical literature and among policy makers, who now ask for large-scale implementation of ICT in routine health service delivery. In this article, we turn the question of failing projects upside down. Instead of investigating the obstacles to implementing ICT and realising permanent changes in health care routines, we ask what makes the temporary ICT project survive, despite an apparent lack of success. Our empirical material is based on Norwegian telemedicine. Through a case study, we take an in-depth look into the history of one particular telemedical initiative and highlight how ICT projects matter on a managerial level. Our analysis reveals how management tasks were delegated to the ICT project, which thus contributed to four processes of organisational control: allocating resources, generating and managing enthusiasm, system correction and aligning local practice and national policies. We argue that the innovation project in itself can be considered an innovation that has become normalised in health care, not in clinical, but in management work. In everyday management, the ICT project appears to be a convenient tool suited to ease the tensions between state regulatory practices and claims of professional autonomy that arise in the wake of new public management reforms. Separating project management and funding from routine practice handles the conceptualised heterogeneity between innovation and routine within contemporary health care delivery. Whilst this separation eases the execution of both normal routines and innovative projects, it also delays expected diffusion of technology.

Anttalainen, U., et al. (2016). "Telemonitoring of CPAP therapy may save nursing time." *Sleep Breath* **20**(4): 1209-1215.

PURPOSE: Telemonitoring might enhance continuous positive airway pressure (CPAP) adherence and save nursing time at the commencement of CPAP therapy. We tested wireless telemonitoring (ResTraxx Online System(R), ResMed) during the habituation phase of the CPAP therapy in obstructive sleep apnea syndrome (OSAS). **METHODS:** In total, 111 consecutive OSAS patients were enrolled. After CPAP titration, patients were followed with the telemonitoring (TM, N = 50) or the usual care (UC, N = 61). The TM group used fixed pressure CPAP device with and the UC group similar device without wireless telemonitoring. Patients and study nurses were unblinded. The evaluated end-points were hours of CPAP use >4 h/day, mask leak <0.4 L/s, and AHI <5/h. Nursing time including extra phone calls, visits, and telemonitoring time was recorded during the habituation phase. CPAP adherence was controlled in the beginning and at the end of the habituation phase and after 1-year of use. **RESULTS:** TM and UC groups did not differ in terms of patient characteristics. The average length of the habituation phase was 4 weeks in the TM group and fixed 3 months in the UC group. Median nursing time was 39 min (range 12-132 min) in the TM group and shorter compared to that of 58 min (range 40-180 min) (p < 0.001) per patient in the UC group. Both treatment groups had high CPAP usage hours (>4 h/day) and the change in usage at the end of the habituation phase did not differ between the groups (p = 0.39). Patients in both groups were equally satisfied with the treatment protocol. CPAP adherence (6.4 h in TM vs. 6.1 h in UC group, p = 0.63) and residual AHI (1.3 in TM vs. 3.2 in UC group, p = 0.04) were good in both groups at 1-year follow-up. **CONCLUSIONS:** Wireless telemonitoring of CPAP treatment could be relevant in closing the gap between the increasing demand and available health-care resources. It may save nursing time without compromising short- or long-term effectiveness of CPAP treatment in OSAS.

Baak, J. P. A., et al. (2000). "Experience with a dynamic inexpensive video-conferencing system for frozen section telepathology." *Analytical Cellular Pathology*(21): 169-175, 163 tabl.

Baardseng, T. (2004). "Telemedicine and eHealth in Norway: administration and delivery of services." *Int J Circumpolar Health* **63**(4): 328-335.

OBJECTIVES: This article reviews the situation in Norway concerning the administration and delivery of telemedicine and eHealth. **METHODS AND RESULTS:** By introducing the Norwegian hospital reform implemented in January 2002, the review provides the background allowing to understand the shift in

strategy within this field in Norway. It also provides a historical context regarding the use and development of telemedicine in Norway. Since the implementation of the hospital reform, it can be argued that, presently, there has been a significant change in strategy from what can be described as a "muddling through"-strategy to a more rational approach, based on common and clearly defined goals. CONCLUSIONS: The hospital reform can be regarded as an important crossroads for the use of information and communication technology in Norway. The hypothesis put forward is that the development since the reform was implemented has strengthened both the willingness and the ability to make rational choices and take important steps forwards regarding the use of information and communication technology in the health sector in Norway, when discussing both telemedicine and eHealth.

Beckers, R. et Strotbaum, V. (2015). "[From the project to standard care. The correct assessment of the benefits of telemedicine has a key role]." Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz **58**(10): 1062-1067.

The reason for this contribution is the hesitant dissemination of telemedicine procedures in the healthcare system. Because of missing benefits there are few incentives for players to use telemedicine procedures in the interest of patients. It is the aim of the work to open a discussion that differentiates the framework for the benefit assessment of telemedicine along certain criteria. The intention is to create a tool that helps to speed up necessary decisions in the committees responsible. This work develops a new categorization for telemedicine applications by differentiating between the medical model and the technical process of telemedicine application. The categories refer to the medical and economic risk level of the applications. Only applications with highest risk must, therefore, be evaluated by RCT surveys.

Bella, S., et al. (2013). "Program of home telemonitoring in patients with cystic fibrosis over a period of 2 years: a contribution to the rationalization of care." Clin Ter **164**(4): e313-317.

OBJECTIVES: In present study we tested the possible presence of a saving for Italian National Health Service (INHS) when using telemonitoring in the follow-up at home of patients with Cystic Fibrosis (CF), in the aim to assess the possible role of Telemedicine in rationalization of hospital admissions. MATERIALS AND METHODS: We performed an economic analysis of the costs incurred by the INHS for patients with CF followed at home by telemonitoring, recalled to hospital under suspicion or diagnosis of acute pulmonary recurrence. RESULTS: We calculated, for 19 patients retrieved in the period of the study, a total saving compared to traditional home care of euro 132.144,91 in 24 months, corresponding to euro 3.303,62/year/patient. CONCLUSIONS: The presence of an economic advantage for the INHS is confirmed once again, although not significant. The data from this study are encouraging regarding the possible role of telemedicine in the organization of homecare of CF patients.

Bijker, L., et al. (2016). "E-care 4 caregivers - an online intervention for nonprofessional caregivers of patients with depression: study protocol for a pilot randomized controlled trial." Trials **17**: 193.

BACKGROUND: Nonprofessional caregivers are highly important in the everyday life of patients with depression. Yet, they may experience increased levels of burden, stress, depression, and anxiety. Therefore, there is a need for interventions that relieve symptoms and are accessible and time-efficient. This paper describes the protocol of a pilot study to evaluate (1) the feasibility of an online self-management intervention, E-care 4 caregivers, for the nonprofessional caregiver of patients with depression, and (2) the initial effects of E-care 4 caregivers on psychological distress, subjective burden, symptoms of anxiety and depression, and quality of life. METHODS/DESIGN: The study is a randomized controlled trial in which we are comparing the E-care 4 caregivers online intervention with a wait list control group. Eighty-four nonprofessional caregivers of patients with depression aged 18 years or older are being recruited from among the general population. Feasibility is determined by semistructured telephone interviews evaluating the subjects' satisfaction with the intervention and by using a questionnaire on the user-friendliness of the system. The primary outcome measure used to examine the initial effects of the intervention is psychological distress. Secondary outcome measures are subjective burden, symptoms of anxiety and depression, level of mastery, and quality of life.

Assessments will be done at baseline and 6 weeks later. Statistical analysis of the effects of the intervention will be carried out on the basis of the intention-to-treat principle. DISCUSSION: E-care 4 caregivers could potentially benefit nonprofessional caregivers, as well as patients and professionals indirectly. TRIAL REGISTRATION: Netherlands Trial Register identifier: NTR5268 . Registered on 30 June 2015.

Bond, C. S. et Worswick, L. (2015). "Self Management and Telehealth: Lessons Learnt from the Evaluation of a Dorset Telehealth Program." *Patient* **8**(4): 311-316.

BACKGROUND: Telehealth is one of the ways in which the UK health service is seeking to improve the care of people living with a long-term condition. One of the aims of its "3 million lives" program is to achieve more effective self care. A lot of the research into telehealth has focused on cost effectiveness, effective working practices, and barriers to adoption. Patient experience is frequently discussed in terms of the reassurance experienced from the support offered through telehealth systems. OBJECTIVE: This study reports the qualitative findings of an evaluation of a local telehealth program introduced by the Dorset Clinical Commissioning Group for patients with chronic obstructive pulmonary disease or chronic heart failure. METHODS: Twenty-nine patients participated in telephone interviews, held at the start of their telehealth experience and after they had been using the system for 3 months. Interviewees included people who had graduated from the telehealth system or had asked to come off it. Healthcare professionals, mainly nurses, involved in the management of patients using the system were also interviewed. RESULTS: The evaluation found that patients were using the telehealth equipment, often beyond the parameters of the formal telehealth scheme, to develop effective self-management techniques. CONCLUSION: These results have implications for policy makers, as removing the equipment when patients graduate as being self managing may mean removing the very tools that make that self management possible.

Boots, L. M., et al. (2016). "Effectiveness of the blended care self-management program "Partner in Balance" for early-stage dementia caregivers: study protocol for a randomized controlled trial." *Trials* **17**(1): 231.

BACKGROUND: The benefits of e-health support for dementia caregivers are becoming increasingly recognized. Reaching early-stage dementia caregivers could prevent high levels of burden and psychological problems in them in the later stages of dementia. An iterative step-wise approach was employed to develop the blended care self-management program "Partner in Balance" for early-stage dementia caregivers. The design of a study evaluating the process characteristics and effects is presented. METHODS/DESIGN: A mixed-method, single-blind, randomized controlled trial with 80 family caregivers of community-dwelling people with (very) mild dementia will be conducted. Participants will be randomly assigned to either the 8-week blended care self-management program "Partner in Balance" or a waiting-list control group. Data will be collected pre intervention and post intervention and at 3-, 6- and 12-month follow-ups. Semi-structured interviews will be conducted post intervention. A process evaluation will investigate the internal and external validity of the intervention. Primary outcomes will include self-efficacy and symptoms of depression. Secondary outcomes will include goal attainment, mastery, psychological complaints (feelings of anxiety and perceived stress), and quality of life. Possible modifying variables such as caregiver characteristics (quality of the relationship, neurotic personality) and interventional aspects (coach) on the intervention effect will also be evaluated. A cost-consequence analysis will describe the costs and health outcomes. DISCUSSION: We expect to find a significant increase in self-efficacy, goal attainment and quality of life and lower levels of psychological complaints (depression, anxiety and stress) in the intervention group, compared with the control group. If such effects are found, the program could provide accessible care to future generations of early-stage dementia caregivers and increase dementia care efficiency. TRIAL REGISTRATION: Dutch trial register NTR4748 .

Boriani, G. (2015). "Remote monitoring of cardiac implantable electrical devices in Europe: quo vadis?" *Europace* **17**(5): 674-676.

Bourbeau, J., et al. (2016). "An international randomized study of a home-based self-management program for severe COPD: the COMET." *Int J Chron Obstruct Pulmon Dis* **11**: 1447-1451.

INTRODUCTION: Most hospitalizations and costs related to COPD are due to exacerbations and insufficient disease management. The COPD patient Management European Trial (COMET) is investigating a home-based multicomponent COPD self-management program designed to reduce exacerbations and hospital admissions. **DESIGN:** Multicenter parallel randomized controlled, open-label superiority trial. **SETTING:** Thirty-three hospitals in four European countries. **PARTICIPANTS:** A total of 345 patients with Global initiative for chronic Obstructive Lung Disease III/IV COPD. **INTERVENTION:** The program includes extensive patient coaching by health care professionals to improve self-management (eg, develop skills to better manage their disease), an e-health platform for reporting frequent health status updates, rapid intervention when necessary, and oxygen therapy monitoring. Comparator is the usual management as per the center's routine practice. **MAIN OUTCOME MEASURES:** Yearly number of hospital days for acute care, exacerbation number, quality of life, deaths, and costs.

Boyne, J. J., et al. (2013). "Cost-effectiveness analysis of telemonitoring versus usual care in patients with heart failure: the TEHAF-study." *J Telemed Telecare* **19**(5): 242-248.

We examined the incremental cost-effectiveness of telemonitoring (TM) versus usual care (UC) in patients with congestive heart failure (CHF). In one university and two general hospitals, 382 patients were randomised to usual care or telemonitoring and followed for 1 year. Hospital-related and home costs were estimated, based on resource use multiplied by the appropriate unit prices. Effectiveness was expressed as QALYs gained. Information was gathered, using 3 monthly costs diaries and questionnaires. The mean age of the patients was 71 years (range 32-93), 59% were male and 64% lived with a partner. Health related quality of life improved by 0.07 points for the usual care and 0.1 points for the telemonitoring group, but the difference between groups was not significant. There were no significant differences in annual costs per patient between groups. At a threshold of euro50,000 the probability of telemonitoring being cost-effective was 48%. The cost effectiveness analysis showed a high level of decision uncertainty, probably caused by the divergence between the participating institutions. It is therefore premature to draw an unambiguous conclusion regarding cost-effectiveness for the whole group.

Brauns, H. J. et Loos, W. (2015). "[Telemedicine in Germany. Status, Barriers, Perspectives]." *Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz* **58**(10): 1068-1073.

Telemedicine as a subject has reached politics, doctors and patients, but it has still not been able to make the leap from research, development, and testing into real practice. This is generally because of the great barriers to implementation, mainly the lack of telematics infrastructure and of payment regulations in Germany. Telemedicine projects are mainly isolated applications and it has not been possible to integrate them in to nationwide regular health services. Other challenges along the path to standard care include that research-based small-medium enterprise (SME) companies usually face high barriers hindering access to this market, because it is impossible for them to finance all the required evidence-based studies to verify the medical benefits and the economic efficiency. Additionally, a high market nontransparency is noted. However, the signs of progress are visible, e.g., the E-health initiative of the German government or recent legislative initiatives. However, long processes are observed that do not facilitate the use of telemedicine. Although some federal states, e.g., North Rhine Westphalia, Bavaria, Mecklenburg-Western Pomerania, and Saxony, show exemplary activities, there are still many white areas on the telemedicine map of Germany. The road to standard care will be long, but is not unattainable. The reasons for supporting telemedicine are still strong. The future development of telemedicine applications will contribute to sustainable and high-quality patient care in Germany.

Brouwers, R. W., et al. (2017). "Effects of cardiac telerehabilitation in patients with coronary artery disease using a personalised patient-centred web application: protocol for the SmartCare-CAD randomised controlled trial." *BMC Cardiovasc Disord* **17**(1): 46.

BACKGROUND: Cardiac rehabilitation has beneficial effects on morbidity and mortality in patients with coronary artery disease, but is vastly underutilised and short-term improvements are often not sustained. Telerehabilitation has the potential to overcome these barriers, but its superiority has not

been convincingly demonstrated yet. This may be due to insufficient focus on behavioural change and development of patients' self-management skills. Moreover, potentially beneficial communication methods, such as internet and video consultation, are rarely used. We hypothesise that, when compared to centre-based cardiac rehabilitation, cardiac telerehabilitation using evidence-based behavioural change strategies, modern communication methods and on-demand coaching will result in improved self-management skills and sustainable behavioural change, which translates to higher physical activity levels in a cost-effective way. METHODS: This randomised controlled trial compares cardiac telerehabilitation with centre-based cardiac rehabilitation in patients with coronary artery disease. We randomise 300 patients entering cardiac rehabilitation to centre-based cardiac rehabilitation (control group) or cardiac telerehabilitation (intervention group). The core component of the intervention is a patient-centred web application, which enables patients to adjust rehabilitation goals, inspect training and physical activity data, share data with other caregivers and to use video consultation. After six supervised training sessions, the intervention group continues exercise training at home, wearing an accelerometer and heart rate monitor. In addition, physical activity levels are assessed by the accelerometer for four days per week. Patients upload training and physical activity data weekly and receive feedback through video consultation once a week. After completion of the rehabilitation programme, on-demand coaching is performed when training adherence or physical activity levels decline with 50% or more. The primary outcome measure is physical activity level, assessed at baseline, three months and twelve months, and is calculated from accelerometer and heart rate data. Secondary outcome measures include physical fitness, quality of life, anxiety and depression, patient empowerment, patient satisfaction and cost-effectiveness. DISCUSSION: This study is one of the first studies evaluating effects and costs of a cardiac telerehabilitation intervention comprising a combination of modern technology and evidence-based behavioural change strategies including relapse prevention. We hypothesise that this intervention has superior effects on exercise behaviour without exceeding the costs of a traditional centre-based intervention. TRIAL REGISTRATION: Netherlands Trial Register NTR5156 . Registered 22 April 2015.

Brunetti, N. D., et al. (2014). "Prehospital telemedicine electrocardiogram triage for a regional public emergency medical service: is it worth it? A preliminary cost analysis." *Clin Cardiol* **37**(3): 140-145.

BACKGROUND: Telemedicine has been shown to improve quality of health-care delivery in several fields of medicine; its cost-effectiveness, however, is still a matter of debate. HYPOTHESIS: Pre-hospital telemedicine electrocardiogram triage for regional public emergency medical service may reduce costs. METHODS: An economic evaluation (cost analysis) was performed from the perspective of regional health-care system. Patients enrolled in the study and considered for cost analysis were those who called the local emergency medical service (EMS; dialing 1-1-8) during 2012 and underwent prehospital field triage with a telemedicine electrocardiogram (ECG) in the case of suspected acute cardiac disease (acute coronary syndrome, arrhythmia). The prehospital ECGs were read by a remote cardiologist, available 24/7. Cost savings associated with this method were calculated by subtracting the cost of prehospital triage with telemedicine support from the cost of conventional emergency department triage (ECG and consultation by a cardiologist). RESULTS: During 2012, the regional EMS performed 109 750 ECGs by telemedicine support. The associated total cost for the regional health-care system was euro1 833 333, with a euro16.70 cost per single ECG/consultation. Given the cost of similar conventional emergency department treatment from a regional rate list of euro24.80 to euro55.20, the savings was euro8.10 to euro38.40 per ECG/consultation (total savings, euro891 759.50 to euro4 219 379.50). The cost for ruling out an acute cardiac disease was euro25.30; for a prehospital diagnosis of cardiovascular disease, euro49.20. With 629 prehospital diagnoses of ST-elevation myocardial infarction and reported reductions in mortality thanks to prehospital diagnosis deduced from prior studies, 69 lives per year presumably could be saved, with a cost per quality-adjusted life year gained of euro1927, euro990/euro - 2508 after correction for potential savings. CONCLUSIONS: Prehospital EMS triage with telemedicine ECG in patients with suspected acute cardiac disease may reduce health-care costs.

Bruyneel, M., et al. (2013). "Real-time attended home-polysomnography with telematic data transmission." *Int J Med Inform* **82**(8): 696-701.

PURPOSE: Home-polysomnography (HPSG) has been proposed as a cost-effective alternative for obstructive sleep apnea (OSA) diagnosis. We assessed, in a feasibility study, whether telematic transmission using the Dream(R) and Sleepbox(R) technologies was associated with low HPSG failure rate. **METHODS:** Patients referred by chest physicians for clinical suspicion of OSA underwent one HPSG, using Dream(R) and Sleepbox(R) (Medatec, Belgium), which is a wireless system able to communicate with Dream(R), and with Internet through a wi-fi/3G interface. It is equipped with a digital infrared camera, and with a speaker/microphone system for bidirectional audio/video communication via Skype(R). The Sleep Lab nurse performed a remote discontinuous monitoring of the PSG. In case of sensor loss, she called the patient who had been previously educated to replace the sensors. **RESULTS:** Twenty-one patients have been studied. 90% of the recordings were of excellent quality. We observed a 10% PSG failure rate: one failure of the Dream(R), and one recording of poor quality. There were 2 successful Skype(R) interventions resulting in readjustment of the defective probes (nasal cannula and EEG). PSG signal visualization was possible in 90% of cases but Skype(R) connection was problematic in 19% of cases. However, patients could be reached by phone to solve the problem. **CONCLUSIONS:** Real-time attended HPSG through telematic data transmission is feasible and could be an interesting perspective to decrease the failure rate of home sleep studies, even if some technical aspects need to be improved.

Buchta, P., et al. (2017). "The impact of remote monitoring of implanted cardioverter-defibrillator (ICD) and cardiac resynchronisation therapy device (CRT-D) patients on healthcare costs in the Silesian population: three-year follow-up." *Kardiol Pol* **75**(6): 573-580.

BACKGROUND: The population of patients with implanted cardioverter-defibrillators (ICD) and cardiac resynchronisation therapy devices (CRT-D) is constantly growing. The use of remote-monitoring (RM) techniques in this group can significantly improve clinical outcomes, but there are limited data about the impact of RM on healthcare costs from a payer's perspective. **AIM:** The aim of the study was to assess the impact on costs for the healthcare system of RM in patients with ICD or CRT-D. **METHODS:** We examined a cohort of 842 patients with ICD or CRT-D. The group was divided into two groups based on RM (or no RM [NRM]), matched according to important clinical characteristics. The subjects were followed for a maximum of three years after implantation (mean follow-up 2.11 +/- 0.83 years). The overall costs for the healthcare provider in the follow-up were defined as the primary endpoint. The secondary endpoint was the use of different types of medical contact events: hospitalisation and number of in-clinic and general practitioner visits (without the number of remote transmissions). **RESULTS:** In the three-year follow-up, the reduction in the costs of treatment for National Health Care in the RM group was 33.5% (median value, $p < 0.001$). In patients with implanted CRT-D, the reduction reached 42.7% ($p = 0.011$), and with ICD it was 31.3% ($p = 0.007$). We observed no significant reduction in the median hospitalisation costs in the three-year follow-up in the RM group ($p = NS$), despite a 25% drop in the mean value. The costs of outpatient visits were slightly higher in the RM group ($p = NS$). In the follow-up period, there was no reduction in the number of medical contact events ($p = NS$). **CONCLUSIONS:** Remote monitoring in patients with implanted ICD or CRT-D devices reduces the cost for the national healthcare provider.

Burri, H., et al. (2013). "Cost-consequence analysis of daily continuous remote monitoring of implantable cardiac defibrillator and resynchronization devices in the UK." *Europace* **15**(11): 1601-1608.

AIMS: The need for ongoing and lifelong follow-up (FU) of patients with cardiac implantable electric devices (CIED) requires significant resources. Remote CIED management has been established as a safe alternative to conventional periodical in-office FU (CFU). An economic model compares the long-term cost and consequences of using daily Home Monitoring(R) (HM) instead of CFU. **METHODS AND RESULTS:** A cost-consequence evaluation comparing HM vs. CFU was performed using a Markov cohort model and data relating to events and costs identified via a systematic review of the literature. The model is conservative, without assuming a reduction of cardiovascular events by HM such as decompensated heart failure or mortality, or considering cost savings such as for transportation. Also cost savings due to an improved timing of elective device replacement, and fewer FU visits needed in patients near device replacement are not considered. Over 10 years, HM is predicted to be cost neutral at about GBP 11 500 per patient in either treatment arm, with all costs for the initial investment into HM and fees for ongoing remote monitoring included. Fewer inappropriate shocks (-

51%) reduce the need for replacing devices for battery exhaustion (-7%); the number of FU visits is predicted to be halved by HM. CONCLUSION: From a UK National Health Service perspective, HM is cost neutral over 10 years. This is mainly accomplished by reducing the number of battery charges and inappropriate shocks, resulting in fewer device replacements, and by reducing the number of in-clinic FU visits.

Buvik, A., et al. (2016). "Quality of care for remote orthopaedic consultations using telemedicine: a randomised controlled trial." *BMC Health Serv Res* **16**: 483.

BACKGROUND: Decentralised services using outreach clinics or modern technology are methods to reduce both patient transports and costs to the healthcare system. Telemedicine consultations via videoconference are one such modality. Before new technologies are implemented, it is important to investigate both the quality of care given and the economic impact from the use of this new technology. The aim of this clinical trial was to study the quality of planned remote orthopaedic consultations by help of videoconference. METHOD: We performed a randomised controlled trial (RCT) with two parallel groups: video-assisted remote consultations at a regional medical centre (RMC) as an intervention versus standard consultation in the orthopaedic outpatient clinic at the University Hospital of North Norway (UNN) as a control. The participants were patients referred to or scheduled for a consultation at the orthopaedic outpatient clinic. The orthopaedic surgeons evaluated each consultation they performed by completing a questionnaire. The primary outcome measurement was the difference in the sum score calculated from this questionnaire, which was evaluated by the non-inferiority of the intervention group. The study design was based on the intention to treat principle. Ancillary analyses regarding complications, the number of consultations per patient, operations, patients who were referred again and the duration of consultations were performed. RESULTS: Four-hundred patients were web-based randomised. Of these, 199 (98 %) underwent remote consultation and 190 (95 %) underwent standard consultation. The primary outcome, the sum score of the specialist evaluation, was significantly lower (i.e. 'better') at UNN compared to RMC (1.72 versus 1.82, $p = 0.0030$). The 90 % confidence interval (CI) for the difference in score (0.05, 0.17) was within the non-inferiority margin. The orthopaedic surgeons involved evaluated 98 % of the video-assisted consultations as 'good' or 'very good'. In the ancillary analyses, there was no significant difference between the two groups. CONCLUSIONS: This study supports the argument that it is safe to offer video-assisted consultations for selected orthopaedic patients. We did not find any serious events related to the mode of consultation. Further assessments of the economic aspects and patient satisfaction are needed before we can recommend its wider application. TRIAL REGISTRATION: ClinicalTrials.gov identifier: NCT00616837.

Cain, S. M., et al. (2017). "Clinical assessment and management of general surgery patients via synchronous telehealth." *J Telemed Telecare* **23**(2): 371-375.

Objective This paper describes how a clinical team at Landstuhl Regional Medical Center (LRMC) successfully integrated synchronous telehealth (TH) into their routine clinical practice. Methods and materials Synchronous TH encounters were performed using Polycom(R) software on surgeons' computers with high-definition (HD) cameras on monitors at distant sites and PolyCom HDX9000(R) Telehealth Practitioner Carts at originating sites. Patients provided consented and were presented to general surgeons by nurses and medical technicians at Army health clinics throughout the European Theater. Results In calendar year (CY) 2014, five general surgeons and two surgical physician assistants (PAs) at Landstuhl Regional Medical Center along with registered nurses (RNs) at six originating clinic sites throughout Europe completed 130 synchronous TH encounters for 101 general surgery patients resulting in 73 completed and 16 recommended surgeries. Eighty-eight percent of patients had a completed or recommended surgery. No surgeries or procedures planned after initial TH evaluation were cancelled. Originating site clinics ranged in distance from 68 miles to 517 miles. Acceptance by providers, patients and clinic staff was high. Conclusion Synchronous TH was effective and safe in evaluating common general surgical conditions. We excluded sensitive and complex conditions requiring a nuanced physical examination. The TH efforts of the general surgery staff have resulted in high-quality, seamless and predictable TH activities that continue to expand into other surgical and medical specialties beyond general surgery. Seven surgeons and two PAs use synchronous TH regularly serving patients over a broad geographic area.

Callan, A. et O'Shea, E. (2015). "Willingness to pay for telecare programmes to support independent living: results from a contingent valuation study." *Soc Sci Med* **124**: 94-102.

An ageing population provokes an economic interest in the resource allocation questions posed by long-term care and critically, the development of sustainable community-based health and social care models that support independent living. This paper explores Irish citizens preferences and willingness to pay (WTP) for a range of community-based care programmes, including different telecare programmes that support older people to continue living at home. The paper reports on a cross-sectional multi-good contingent valuation survey conducted between April and September 2009 with three representative samples of the Irish population (N = 1214) to identify rankings and preferences for different community care programmes including: family care programme, a state-provided care programme and three different telecare programmes. The survey design permits the identification of strength, direction and relative preferences of different forms of community care provision. We also investigate convergent validity between ranking and willingness to pay results. We find that while people place significant value on formal state care provision and on telecare programmes, willingness to pay (WTP) estimates continue to highlight the importance of family care, which remains the strongest preference of the Irish population for the provision of community-based care for older people in the country. Respondents weakened their ranking preferences in the WTP exercise. However, both the direction of ranking and WTP estimates confirm the importance of family care. While all telecare programmes generated some economic value, telecare associated with social connection had much stronger support than telecare used to support physical or cognitive care needs. This paper offers unique information on societal values for different forms of community care provision, and in particular, the direction of preferences for technology-based approaches.

Calo, L., et al. (2013). "Economic impact of remote monitoring on ordinary follow-up of implantable cardioverter defibrillators as compared with conventional in-hospital visits. A single-center prospective and randomized study." *J Interv Card Electrophysiol* **37**(1): 69-78.

INTRODUCTION: Few data are available on actual follow-up costs of remote monitoring (RM) of implantable defibrillators (ICD). Our study aimed at assessing current direct costs of 1-year ICD follow-up based on RM compared with conventional quarterly in-hospital follow-ups. METHODS AND RESULTS: Patients (N = 233) with indications for ICD were consecutively recruited and randomized at implant to be followed up for 1 year with standard quarterly in-hospital visits or by RM with one in-hospital visit at 12 months, unless additional in-hospital visits were required due to specific patient conditions or RM alarms. Costs were calculated distinguishing between provider and patient costs, excluding RM device and service cost. The frequency of scheduled in-hospital visits was lower in the RM group than in the control arm. Follow-up required 47 min per patient/year in the RM arm versus 86 min in the control arm (p = 0.03) for involved physicians, generating cost estimates for the provider of USD 45 and USD 83 per patient/year, respectively. Costs for nurses were comparable. Overall, the costs associated with RM and standard follow-up were USD 103 +/- 27 and 154 +/- 21 per patient/year, respectively (p = 0.01). RM was cost-saving for the patients: USD 97 +/- 121 per patient/year in the RM group versus 287 +/- 160 per patient/year (p = 0.0001). CONCLUSION: The time spent by the hospital staff was significantly reduced in the RM group. If the costs for the device and service are not charged to patients or the provider, patients could save about USD 190 per patient/year while the hospital could save USD 51 per patient/year.

Cazac, C. et Radu, G. (2014). "Telesurgery--an efficient interdisciplinary approach used to improve the health care system." *J Med Life* **7 Spec No. 3**: 137-141.

At the time of the writing of this article, there are three operational telemedicine control centers in Bucharest, Targul-Mures, and Iasi; however, the current telemedicine infrastructure has limited geographic coverage and is exclusively used in the field of emergency medicine with only few promising beginnings in the domain of family medicine. Nevertheless, many areas of Romania are still lacking qualified medical personnel that can perform vital surgeries thus requiring patients to travel long distances to obtain the health care services they require. In order to improve the current healthcare infrastructure and eliminate the difficulties associated with a lack of qualified medical

personnel in rural areas of the country, this article suggests the implementation of telesurgery as a practical solution. This article will hope to analyze the applicability of telesurgery by looking at the benefits and costs of creating a national telesurgery infrastructure, by predicting possible obstacles in creating such a system and by suggesting ways in which these obstacles can be avoided. The writing of this article was possible thanks to interviews, articles, and data obtained from surgeons and medical personnel that practice in Romania, the Republic of Moldova, Canada, and the United States of America. A vast majority of technical details has been furnished by the producers of robotic surgery platforms such as Intuitive Surgical(R).

CCE (2003). Communication de la commission : suivi du processus de réflexion à haut niveau sur la mobilité des patients et l'évolution des soins de santé dans l'Union européenne. Bruxelles Conseil de l'Union Européenne: 28 , 21 ann., 21 graph.

Bien que les services de santé et soins médicaux soient essentiellement du ressort des États membres, la coopération au niveau européen est largement susceptible de profiter à la fois aux patients individuels et aux systèmes de santé en général. L'union européenne s'est donc accordé à reconnaître qu'un cadre était nécessaire, au niveau européen, pour favoriser la coopération et façonner cette évolution, mais faisait actuellement défaut. C'est ce qui est ressorti des conclusions adoptées par le Conseil " Santé " du 26 juin 2002 concernant la mobilité des patients et l'évolution des soins de santé dans l'Union européenne. Le Conseil a reconnu qu'il serait utile que la Commission entame, en étroite collaboration avec le Conseil et tous les États membres - en particulier les ministres de la santé et d'autres intervenants clés - un processus de réflexion à haut niveau. La Commission a donc réuni les ministres de la santé de toute l'Union, des représentants des patients, des professionnels de la santé, des prestataires et acheteurs de soins de santé, ainsi que le Parlement européen, au sein d'un processus de réflexion à haut niveau, qui a abouti à un vaste rapport comportant dix-neuf recommandations spécifiques (http://europa.eu.int/comm/health/ph_overview/keydocs_overview_en.htm). La présente communication donne suite au rapport du processus de réflexion sur la mobilité des patients et l'évolution des soins de santé dans l'Union européenne et constitue la réponse de la Commission aux recommandations. Elles s'inscrivent dans une stratégie plus vaste. Une communication distincte sur l'extension de la méthode ouverte de coordination aux soins de santé et aux soins de longue durée présente des propositions concernant la mise en place d'une coordination européenne à l'appui des stratégies nationales destinées à réorganiser et à développer les soins de santé et les soins de longue durée (COM(2004) 304 final).

Cheung, K. L., et al. (2017). "A Review of the Theoretical Basis, Effects, and Cost Effectiveness of Online Smoking Cessation Interventions in the Netherlands: A Mixed-Methods Approach." *J Med Internet Res* **19**(6): e230.

BACKGROUND: Tobacco smoking is a worldwide public health problem. In 2015, 26.3% of the Dutch population aged 18 years and older smoked, 74.4% of them daily. More and more people have access to the Internet worldwide; approximately 94% of the Dutch population have online access. Internet-based smoking cessation interventions (online cessation interventions) provide an opportunity to tackle the scourge of tobacco. OBJECTIVE: The goal of this paper was to provide an overview of online cessation interventions in the Netherlands, while exploring their effectivity, cost effectiveness, and theoretical basis. METHODS: A mixed-methods approach was used to identify Dutch online cessation interventions, using (1) a scientific literature search, (2) a grey literature search, and (3) expert input. For the scientific literature, the Cochrane review was used and updated by two independent researchers (n=651 identified studies), screening titles, abstracts, and then full-text studies between 2013 and 2016 (CENTRAL, MEDLINE, and EMBASE). For the grey literature, the researchers conducted a Google search (n=100 websites), screening for titles and first pages. Including expert input, this resulted in six interventions identified in the scientific literature and 39 interventions via the grey literature. Extracted data included effectiveness, cost effectiveness, theoretical factors, and behavior change techniques used. RESULTS: Overall, many interventions (45 identified) were offered. Of the 45 that we identified, only six that were included in trials provided data on effectiveness. Four of these were shown to be effective and cost effective. In the scientific literature, 83% (5/6) of these interventions included changing attitudes, providing social support, increasing self-efficacy, motivating

smokers to make concrete action plans to prepare their attempts to quit and to cope with challenges, supporting identity change and advising on changing routines, coping, and medication use. In all, 50% (3/6) of the interventions included a reward for abstinence. Interventions identified in the grey literature were less consistent, with inclusion of each theoretical factor ranging from 31% to 67% and of each behavior change technique ranging from 28% to 54%. CONCLUSIONS: Although the Internet may provide the opportunity to offer various smoking cessation programs, the user is left bewildered as far as efficacy is concerned, as most of these data are not available nor offered to the smokers. Clear regulations about the effectiveness of these interventions need to be devised to avoid disappointment and failed quitting attempts. Thus, there is a need for policy regulations to regulate the proliferation of these interventions and to foster their quality in the Netherlands.

Christiansen, S. et Klotzer, J. P. (2015). "[Cost effectiveness of telemedicine]." *Versicherungsmedizin* **67**(4): 193-196.

Demographic development in Germany will lead to increasing health care costs. Telemedicine is believed to have the potential to generate cost savings and therefore to reduce the expected increase in health care costs. This publication reviews the relevant literature, presenting the results of available studies, describing the problems involved in performing appropriate studies, and examining solutions.

Christiansen, S. et Klotzer, J. P. (2015). "[Telemedicine - an overview]." *Versicherungsmedizin* **67**(3): 133-135.

Currently, there is considerable interest in telemedicine for two reasons: Firstly, it is expected to bring improvements in health care. Secondly, it is assumed that telemedicine reduces health care costs. The latter is of particular importance because health care costs are expected to rise considerably in the future. The present article describes the current situation of telemedicine in Germany.

Chronaki, C. E. et Vardas, P. (2013). "Remote monitoring costs, benefits, and reimbursement: a European perspective." *Europace* **15 Suppl 1**: i59-i64.

AIMS: To provide a European perspective on reimbursement issues surrounding remote monitoring of cardiac implantable electronic devices in view of the anticipated costs and benefits. METHODS AND RESULTS: Review of recent literature addressing clinical, economic, sociocultural, and technological factors associated with remote monitoring. When healthcare transformation is urgently needed, remote monitoring offers opportunities to innovate and cope with escalating costs and constrained resources, while improving patient safety, quality, and access to care as reflected in clinical studies. The introduction of remote monitoring into daily practice requires analysis of reimbursement policies to address funding scope, payment method, payer, price and allocation, and alignment with health system objectives and goals to ensure financial and operational sustainability of resources, infrastructure, and processes. Remote monitoring policies should gradually transition from activity-based, added-value services in a care-and-cure setting, to performance and outcome-oriented highlighting prevention, surveillance, and empowerment. By encouraging and rewarding innovation and interoperability, proprietary remote monitoring technologies can open up using standards and connect to support a growing evidence base that guides clinical decision support and planning of future policies. CONCLUSION: Careful planning, sharing of experiences, and gradual adoption of reimbursement models that focus on outcome, performance, and cost-effectiveness are key aspects of containing escalating costs and improving quality and access to healthcare. Despite differences in health systems and payment methods in Europe, policy-makers, professional societies, payers, providers, and the industry need to join forces to transform healthcare and make innovation happen.

Chua, R., et al. (2001). "Randomised controlled trial of telemedicine for new neurological outpatient referrals." *Journal of Neurology Neurosurgery and Psychiatry*(71): 63-66, 65 tabl., 61 fig.

Columbo, F., et al. (2011). "Ageing and long-term care." *Eurohealth* **17**(2-3): 44, tabl., fig.
http://www.euro.who.int/_data/assets/pdf_file/0018/150246/Eurohealth-Vol17-No-2-3-Web.pdf

This issue of Eurohealth looks at meeting the challenge of ageing and long-term care. Articles cover European and OECD countries with topics including: future demand, cost projections, chronic diseases,

remote care, workforce issues, etc. Other articles include: the European Directive on cross-border health care (England); the future of NICE (England); and the effects of hospital ownership on performance (Germany).

Commission Européenne (2008). Communication de la commission au parlement européen, au conseil, au comité économique et social européen et au comité des régions concernant la télémédecine au service des patients, des systèmes de soins de santé et de la société. Bruxelles Conseil de l'Union Européenne: 17 , tab., graph., fig.

Il est indéniable que l'intégration des services numériques dans les systèmes des soins de santé représente une tâche ardue. La présente communication a pour but de soutenir et d'encourager les États membres dans cette entreprise, en recensant les principaux obstacles qui s'opposent à une plus large utilisation de la télémédecine, en aidant à les surmonter et en fournissant des éléments concrets de nature à susciter la confiance dans ces services et à les faire accepter. La communication définit un ensemble d'actions qui devront être entreprises par les États membres, par la Commission et par la communauté des parties intéressées au sens large. Elles sont plus particulièrement axées sur les aspects suivants ; susciter la confiance à l'égard des services de télémédecine et les faire accepter . apporter une certaine clarté juridique ; résoudre les problèmes techniques et faciliter le développement du marché.

Commission Européenne (2018). Market study on telemedicine. Bruxelles Commission européenne: 130 , tab., graph., fig.

https://ec.europa.eu/health/sites/health/files/ehealth/docs/2018_provision_marketstudy_telemedicine_en.pdf

Commandée par l'Union européenne, cette étude examine le marché européen de la télémédecine et les facteurs qui en déterminent son développement. L'analyse présente les applications de télémédecine et les directives techniques, et décrit la dynamique du marché et les obstacles potentiels limitant un déploiement et une adoption plus larges. Une évaluation de la rentabilité d'un déploiement à grande échelle dans les conditions actuelles et futures du marché est entreprise afin de fournir aux décideurs des conseils judicieux.

Costa, P. D., et al. (2013). "Clinical and economic impact of remote monitoring on the follow-up of patients with implantable electronic cardiovascular devices: an observational study." *Telemed J E Health* **19**(2): 71-80.

Traditional follow-up of patients with cardiovascular devices is still an activity that, in addition to serving an increasing population, requires a considerable amount of time and specialized human and technical resources. Our aim was to evaluate the applicability of the CareLink((R)) (Medtronic, Minneapolis, MN) remote monitoring system as a complementary option to the follow-up of patients with implanted devices, between in-office visits. Evaluated outcomes included both clinical (event detection and time to diagnosis) and nonclinical (patient's satisfaction and economic costs) aspects. An observational, longitudinal, prospective study was conducted with patients from a Portuguese central hospital sampled by convenience during 1 week (43 patients). Data were collected in four moments: two in-office visits and two remote evaluations, reproducing 1 year of clinical follow-up. Data sources included health records, implant reports, initial demographic data collection, follow-up printouts, and a questionnaire. After selection criteria were verified, 15 patients (11 men [73%]) were included, 63.4+/-10.8 years old, representing 14.0+/-6.3 implant months. Clinically, 15 events were detected (9 by remote monitoring and 6 by patient-initiated activation), of which only 9 were symptomatic. We verified that remote monitoring could detect both symptomatic and asymptomatic events, whereas patient-initiated activation only detected symptomatic ones (p=0.028). Moreover, the mean diagnosis anticipation in patients with events was approximately 58 days (p<0.001). In nonclinical terms, we observed high or very high satisfaction (67% and 33%, respectively) with using remote monitoring technology, but still 8 patients (53%) stated they preferred in-office visits. Finally, the introduction of remote monitoring technology has the ability to reduce total follow-up costs for patients by 25%. We conclude that the use of this system constitutes a viable complementary option to the follow-up of patients with implantable devices, between in-office visits.

Cuperus, N., et al. (2016). "Cost-Utility and Cost-Effectiveness Analyses of Face-to-Face Versus Telephone-Based Nonpharmacologic Multidisciplinary Treatments for Patients With Generalized Osteoarthritis." *Arthritis Care Res (Hoboken)* **68**(4): 502-510.

OBJECTIVE: To evaluate, from a societal perspective, the cost utility and cost effectiveness of a nonpharmacologic face-to-face treatment program compared with a telephone-based treatment program for patients with generalized osteoarthritis (GOA). **METHODS:** An economic evaluation was carried out alongside a randomized clinical trial involving 147 patients with GOA. Program costs were estimated from time registrations. One-year medical and nonmedical costs were estimated using cost questionnaires. Quality-adjusted life years (QALYs) were estimated using the EuroQol (EQ) classification system, EQ rating scale, and the Short Form 6D (SF-6D). Daily function was measured using the Health Assessment Questionnaire (HAQ) disability index (DI). Cost and QALY/effect differences were analyzed using multilevel regression analysis and cost-effectiveness acceptability curves. **RESULTS:** Medical costs of the face-to-face treatment and telephone-based treatment were estimated at euro387 and euro252, respectively. The difference in total societal costs was nonsignificantly in favor of the face-to-face program (difference euro708; 95% confidence interval [95% CI] -euro5,058, euro3,642). QALYs were similar for both groups according to the EQ, but were significantly in favor of the face-to-face group, according to the SF-6D (difference 0.022 [95% CI 0.000, 0.045]). Daily function was similar according to the HAQ DI. Since both societal costs and QALYs/effects were in favor of the face-to-face program, the economic assessment favored this program, regardless of society's willingness to pay. There was a 65-90% chance that the face-to-face program had better cost utility and a 60-70% chance of being cost effective. **CONCLUSION:** This economic evaluation from a societal perspective showed that a nonpharmacologic, face-to-face treatment program for patients with GOA was likely to be cost effective, relative to a telephone-based program.

Danis, J., et al. (2016). "[Telemedicine in dermatological practice: teledermatology]." *Orv Hetil* **157**(10): 363-369.

Technological advances in the fields of information and telecommunication technologies have affected the health care system in the last decades, and lead to the emergence of a new discipline: telemedicine. The appearance and rise of internet and smart phones induced a rapid progression in telemedicine. Several new applications and mobile devices are published every hour even for medical purposes. Parallel to these changes in the technical fields, medical literature about telemedicine has grown rapidly. Due to its visual nature, dermatology is ideally suited to benefit from this new technology and teledermatology became one of the most dynamically evolving fields of telemedicine by now. Teledermatology is not routinely practiced in Hungary yet, however, it promises the health care system to become better, cheaper and faster, but we have to take notice on the experience and problems faced in teledermatologic applications so far, summarized in this review.

Darago, L., et al. (2013). "[Benefits and disadvantages of telemedicine]." *Orv Hetil* **154**(30): 1167-1171.

Telemedicine is used more and more frequently worldwide. It is increasingly popular in North America, Australia, South Africa, as well as the Scandinavian countries. However, it is not commonly used in Hungary despite various attempts, which is presumably due to earlier dismissive governmental attitude. In this paper the authors analyze ethical, legal and financial aspects of telemedicine from the viewpoints of physicians and patients, too. The results indicate that it cannot be clearly decided whether telemedicine is worth to apply at present. Further, introduction of telemedicine should be based on experience gained in local application.

Debnath, D. (2004). "Activity analysis of telemedicine in the UK." *Postgrad Med J* **80**(944): 335-338.

BACKGROUND: Telemedicine is a new way of delivering health care to people, particularly in remote areas. The UK has experienced a surge of telematic projects in recent years. However, there is little information available in the literature regarding the past and present of telemedicine in the UK.

OBJECTIVES: To evaluate the state of telemedicine in the UK. **METHODS:** All the projects that took

place in UK since 1991 were considered for the study and evaluated according to the population and area served. RESULTS: A total of 216 projects were identified. The number of projects was highest in England (172). Emergency medicine, medical specialties, and educational projects received most consideration (9.7% each). With the exception of Wales, the number of projects increased steadily with time. The projects, when correlated in accordance with the area (per 10 000 sq km) and population (per million), were found to be highest in England (49.5%) and Northern Ireland (36.2%) respectively. No dedicated educational project took place in Scotland, Northern Ireland, and Wales. CONCLUSIONS: The UK embraced telemedicine in the early 1990s and the overall growth had been steady. Scotland, in spite of being the most likely beneficiary in UK, has lagged behind in telemedicine schemes and merits more projects. The issue of tele-education needs urgent review. Multisite trials and a combined approach involving the government, health professionals, technologists, and patients' representatives would facilitate such developments and help widen the application of telemedicine.

Demartines, N., et al. (2000). "An evaluation of telemedicine in surgery. Telediagnosis compared with direct diagnosis." *Archives of Surgery* **135**: 849-853.

<http://archsurg.jamanetwork.com/article.aspx?articleid=390642>

Diederichsen, A. C., et al. (2015). "The Danish Cardiovascular Screening Trial (DANCAVAS): study protocol for a randomized controlled trial." *Trials* **16**: 554.

BACKGROUND: The significant increase in the average life expectancy has increased the societal challenge of managing serious age-related diseases, especially cancer and cardiovascular diseases. A routine check by a general practitioner is not sufficient to detect incipient cardiovascular disease. DESIGN: Population-based randomized clinically controlled screening trial. METHODS: PARTICIPANTS: 45,000 Danish men aged 65-74 years living on the Island of Funen, or in the surrounding communities of Vejle and Silkeborg. No exclusion criteria are used. INTERVENTIONS: One-third will be invited to cardiovascular seven-faceted screening examinations at one of four locations. The screening will include: (1) low-dose non-contrast CT scan to detect coronary artery calcification and aortic/iliac aneurysms, (2) brachial and ankle blood pressure index to detect peripheral arterial disease and hypertension, (3) a telemetric assessment of the heart rhythm, and (4) a measurement of the cholesterol and plasma glucose levels. Up-to-date cardiovascular preventive treatment is recommended in case of positive findings. OBJECTIVE: To investigate whether advanced cardiovascular screening will prevent death and cardiovascular events, and whether the possible health benefits are cost effective. OUTCOME: Registry-based follow-up on all cause death (primary outcome), and costs after 3, 5 and 10 years (secondary outcome). RANDOMIZATION: Each of the 45,000 individuals is, by EPIDATA, given a random number from 1-100. Those numbered 67+ will be offered screening; the others will act as a control group. BLINDING: Only those randomized to the screening will be invited to the examination; the remaining participants will not. Numbers randomized: A total of 45,000 men will be randomized 1:2. Recruitment: Enrollment started October 2014. OUTCOME: A 5% reduction in overall mortality (HR=0.95), with the risk for a type I error=5% and the risk for a type II error=80%, is expected. We expect a 2-year enrollment, a 10-year follow-up, and a median survival of 15 years among the controls. The attendance to screening is assumed to be 70%. DISCUSSION: The primary aim of this so far stand-alone population-based, randomized trial will be to evaluate the health benefits and costeffectiveness of using non-contrast full truncus computer tomography (CT) scans (to measure coronary artery calcification (CAC) and identify aortic/iliac aneurysms) and measurements of the ankle brachial blood pressure index (ABI) as part of a multifocal screening and intervention program for CVD in men aged 65-74. Attendance rate and compliance to initiated preventive actions must be expected to become of major importance. TRIAL REGISTRATION: Current Controlled Trials: ISRCTN12157806 (21 March 2015).

Diemberger, I., et al. (2015). "Detect Long-term Complications After ICD Replacement (DECODE): Rationale and Study Design of a Multicenter Italian Registry." *Clin Cardiol* **38**(10): 577-584.

The replacement of implantable cardioverter-defibrillators (ICDs) may give rise to considerable clinical consequences, the importance of which is underrated by the medical community. Replacement-related adverse events are difficult to identify and require monitoring of both short-term complications and long-term patient outcome. The aim of this study is to perform a structured

evaluation of both short- and long-term adverse events and a cost analysis of consecutive ICD replacement procedures. Detect Long-term Complications After ICD Replacement (DECODE) is a prospective, single-arm, multicenter cohort study designed to estimate long-term complication rates (at 12 months and 5 years) in patients undergoing ICD generator replacement. The study will also evaluate predictors of complications, patient management before and during the replacement procedure in clinical practice, and the costs related to use of health care resources. About 800 consecutive patients with standard indications for ICD generator replacement will be enrolled in this study. The decision to undertake generator replacement/upgrade will be made according to the investigators' own judgment (which will be recorded). Patients will be followed for 60 months through periodic in-hospital examinations or remote monitoring. Detailed data on complications related to ICD replacement in current clinical practice are still lacking. The analysis of adverse events will reveal the value of new preventive strategies, thereby yielding both clinical and economic benefits. Moreover, assessment of complication rates after ICD replacement in a real-life setting will help estimate the actual long-term cost of ICD therapy and assess the real impact of increasing ICD longevity on cost-effectiveness.

Dixon, P., et al. (2016). "Cost-effectiveness of telehealth for patients with raised cardiovascular disease risk: evidence from the Healthlines randomised controlled trial." *Bmj Open* **6**(8): e012352.

OBJECTIVES: To investigate the cost-effectiveness of a telehealth intervention for primary care patients with raised cardiovascular disease (CVD) risk. **DESIGN:** A prospective within-trial patient-level economic evaluation conducted alongside a randomised controlled trial. **SETTING:** Patients recruited through primary care, and intervention delivered via telehealth service. **PARTICIPANTS:** Adults with a 10-year CVD risk $\geq 20\%$, as measured by the QRISK2 algorithm, with at least 1 modifiable risk factor. **INTERVENTION:** A series of up to 13 scripted, theory-led telehealth encounters with healthcare advisors, who supported participants to make behaviour change, use online resources, optimise medication and improve adherence. Participants in the control arm received usual care. **PRIMARY AND SECONDARY OUTCOME MEASURES:** Cost-effectiveness measured by net monetary benefit at the end of 12 months of follow-up, calculated from incremental cost and incremental quality-adjusted life years (QALYs). Productivity impacts, participant out-of-pocket expenditure and the clinical outcome were presented in a cost-consequences framework. **RESULTS:** 641 participants were randomised-325 to receive the telehealth intervention in addition to usual care and 316 to receive only usual care. 18% of participants had missing data on either costs, utilities or both. Multiple imputation was used for the base case results. The intervention was associated with incremental mean per-patient National Health Service (NHS) costs of pound138 (95% CI 66 to 211) and an incremental QALY gain of 0.012 (95% CI - 0.001 to 0.026). The incremental cost-effectiveness ratio was pound10 859. Net monetary benefit at a cost-effectiveness threshold of pound20 000 per QALY was pound116 (95% CI -58 to 291), and the probability that the intervention was cost-effective at this threshold value was 0.77. Similar results were obtained from a complete case analysis. **CONCLUSIONS:** There is evidence to suggest that the Healthlines telehealth intervention was likely to be cost-effective at a threshold of pound20 000 per QALY. **TRIAL REGISTRATION NUMBER:** ISRCTN27508731; Results. Prospectively registered 05 July 2012.

Doupi, P., et al. (2005). "eHealth in Europe: towards higher goals." *World Hosp Health Serv* **41**(2): 35-39, 41, 43.

Significant events are unfolding in the field of eHealth in Europe. eHealth has been a strategic priority of the European Commission in both the eEurope 2002 and 2005 Action Plans. But how are developments on the national level progressing? The authors contrast the status-quo of eHealth in the EU-15 with the latest trends and key action priorities in the EU-25 after the Union's latest enlargement in May 2004. The initiatives and actions of the European Commission are presented vis-a-vis those of national Member States, particularly in terms of strategic priorities and implementation actions. The review is accompanied by an analysis of expert feedback on eHealth drivers and barriers.

Duplaga, M. (2007). "E-health development policies in new member states in Central Europe." *World Hosp Health Serv* **43**(2): 34-38.

The paper brings insights on the process of e-health development in countries of Central and Eastern Europe, which joined European Union in 2004 years. The main part of the activities resulting in this review were carried out within the eHealth European Research Area (eHealth ERA) project established under the EU 6. Framework Programme. The research team involved in the project activities in the Centre of Innovation, Technology Transfer and University Development, Jagiellonian University focused the inquiries on the six countries: Poland, Czech Republic, Slovakia, Hungary, Lithuania and Latvia. The tool for data collection elaborated by the STAKES, Finland was applied. The main areas covered within the analysis included: health system characteristics, e-health policies definition process and deployment, specific activities in e-health subdomain as well as research and development programmes held in European countries. It seems that general background and intensive process of system and economy transformation was key factor influencing greatly the perception and status of the e-health domain in these countries. The opportunities related to the inclusion in the European Union was another essential factor bringing additional important impact on the e-health formation. All these countries started painful reform in early 90s after the fall of the communist governments. The health care system in general was not the prime benefactors of these changes.

Dwinger, S., et al. (2013). "Telephone-based health coaching for chronically ill patients: study protocol for a randomized controlled trial." *Trials* **14**: 337.

BACKGROUND: The rising prevalence of chronic conditions constitutes a major burden for patients and healthcare systems and is predicted to increase in the upcoming decades. Improving the self-management skills of patients is a strategy to steer against this burden. This could lead to better outcomes and lower healthcare costs. Health coaching is one method for enhancing the self-management of patients and can be delivered by phone. The effects of telephone-based health coaching are promising, but still inconclusive. Economic evaluations and studies examining the transferability of effects to different healthcare systems are still rare. Aim of this study is to evaluate telephone-based health coaching for chronically ill patients in Germany. **METHODS/DESIGN:** The study is a prospective randomized controlled trial comparing the effects of telephone-based health coaching with usual care during a 4-year time period. Data are collected at baseline and after 12, 24 and 36 months. Patients are selected based on one of the following chronic conditions: diabetes, coronary artery disease, asthma, hypertension, heart failure, COPD, chronic depression or schizophrenia. The health coaching intervention is carried out by trained nurses employed by a German statutory health insurance. The frequency and the topics of the health coaching are manual-based but tailored to the patients' needs and medical condition, following the concepts of motivational interviewing, shared decision-making and evidence-based-medicine. Approximately 12,000 insurants will be enrolled and randomized into intervention and control groups. Primary outcome is the time until hospital readmission within two years after enrolling in the health coaching, assessed by routine data. Secondary outcomes are patient-reported outcomes like changes in quality of life, depression and anxiety and clinical values assessed with questionnaires. Additional secondary outcomes are further economic evaluations like health service use as well as costs and hospital readmission rates. The statistical analyses includes intention-to-treat and as-treated principles. The recruitment will be completed in September 2014. **DISCUSSION:** This study will provide evidence regarding economic and clinical effects of telephone-delivered health coaching. Additionally, this study will show whether health coaching is an adequate option for the German healthcare system to address the growing burden of chronic diseases. **TRIAL REGISTRATION:** German Clinical Trials Register (Deutsches Register Klinischer Studien; DRKS) DRKS00000584.

Eedy, D. J. et Wootton, R. (2001). "Teledermatology : a review." *British Journal of Dermatology*(144): 696-707, 693 tabl., 697 fig.

Esmatjes, E., et al. (2014). "The efficiency of telemedicine to optimize metabolic control in patients with type 1 diabetes mellitus: Telemed study." *Diabetes Technol Ther* **16**(7): 435-441.

OBJECTIVE: This study evaluated the impact of an Internet-based telematic system on the economic and clinical management of patients with type 1 diabetes mellitus. **RESEARCH DESIGN AND METHODS:** This 6-month prospective, randomized, comparative, open, multicenter study included patients with type 1 diabetes >18 years old treated with multiple insulin doses and with a glycated hemoglobin

(HbA1c) level of >8%. We compared an intervention group (IG) (two face-to-face and five telematic appointments) with a control group (CG) (seven face-to-face appointments). The variables studied were (1) patient and healthcare team costs, (2) metabolic control, (3) knowledge of diabetes, (4) quality of life, and (5) self-care treatment adherence. RESULTS: Of the 154 patients included, 118 (76.6%) completed the study (IG, 54; CG, 64). The time used by the CG to follow the program was 823+/-645 min versus 353+/-222 min in the IG (P<0.0001). Compared with the CG, the IG required less healthcare time from the professionals (288+/-105 min vs. 232+/-89 min; P<0.001). HbA1c improved in both groups (IG, 9.2+/-1.5% [77.0+/-17.0 mmol/mol] vs. 8.7+/-1.5% [71.6+/-17.0 mmol/mol] [P<0.001]; CG, 9.2+/-0.9% [77.0+/-10.0 mmol/mol] vs. 8.6+/-0.9% [70.5+/-10.0 mmol/mol] [P<0.001], as did knowledge and self-care treatment adherence. CONCLUSIONS: The use of interactive telematic appointments in subjects with type 1 diabetes and inadequate metabolic control is an efficient strategy, providing results comparable to those of face-to-face appointments in relation to improvement in glycemic control, knowledge acquisition, and self-care treatment adherence, with a significant reduction in the time used, especially by patients.

Fares, A. et Bernstein, D. A. (2016). "Organization of the Swiss model of primary care telemedicine. Is adoption by the French health system possible?" *Techniques Hospitalières*(758): 2 p.

La Fédération française de télémédecine présente un extrait d'article publié dans la revue *European Research in Telemedicine*, qui pourrait intéresser les lecteurs de *Techniques hospitalières* (voir le sommaire dans la "Description" ci-dessous). L'article présenté ici a été publié dans le numéro de mars 2016 par Asma Fares et David Nathan Bernstein, qui développent le modèle suisse de télémédecine de premier recours et suggèrent son adaptabilité à la France (Fares A, Bernstein DN. Organization of the Swiss model of primary care telemedicine: Is adoption by the French health system possible? *Eur Res Telemed*. 2016 Mar;5(1) :3-8. <http://dx.doi.org/10.1016/j.eurtel.2016.01.001>).

Fieec. C. (2011). *Etude sur la télésanté et la télémédecine en Europe*. Paris ; FIEEC ; Paris ASIP: 2 vol. (168 +121),

Dans le cadre de leurs missions respectives et dans la continuité des politiques publiques menées en faveur d'un développement structuré et pérenne de la télémédecine en France (loi HPST de juillet 2009 et décret télémédecine d'octobre 2010), la Fédération des Industries Electriques, Electroniques et de Communication (FIEEC) et l'ASIP Santé ont piloté la réalisation d'une étude européenne sur le développement d'applications de télémédecine et de télésanté et dont les principaux enseignements ont été présentés au cours d'une conférence de presse le mardi 29 mars 2011.

Fountoulakis, S., et al. (2015). "Impact and duration effect of telemonitoring on EtabA1c, BMI and cost in insulin-treated Diabetes Mellitus patients with inadequate glycemic control: A randomized controlled study." *Hormones (Athens)* 14(4): 632-643.

OBJECTIVE: To monitor and control the blood glucose levels in inefficiently insulin-treated patients with type 1 and 2 diabetes mellitus (DM) using a telemonitoring system and determine whether the improvement of HbA1c has a lasting effect following its discontinuation. DESIGN: Seventy inefficiently controlled insulin-treated DM patients using telemonitoring (telemonitoring group-TG) [HbA1c 9.9+/-2.3% (85+/-24.9mmol/mol)] and 35 age-, body mass index (BMI)- and Hba1c-matched insulin-treated patients receiving outpatient care (control group-CG) [HbA1c 9.7+/-2.1% (82+/-23.4mmol/mol)] were enrolled. Data of TG were transmitted from the glucose-meters to our computers via modem. Communication was achieved via e-mails and mobile phone text-messages through integrated software. HbA1c and BMI were evaluated at enrollment, 3 and 6 months, and 6 months after telemonitoring discontinuation. Frequency of hypo- and hyperglycemias and cost were also analyzed. RESULTS: Significant reduction in HbA1c was observed in TG both at 3 [7.1+/-1.0% (54+/-10.5mmol/mol) p#60;0.001] and 6 months [6.9+/-0.9% (52+/-9.5mmol/mol) p#60;0.001], compared to the CG group at the same timepoints. Significant reduction was also observed in the TG subgroups with EtabA1c#8805;10% and 10#62;HbA1c#8805;7.5% at 3 and 6 months, compared to CG. No statistically significant differences in BMI were observed between TG and CG. Six months after telemonitoring discontinuation, HbA1c in TG was slightly increased [7.3+/-1.0% (56+/-10.4mol/mol)]. Attenuation was also observed in both TG subgroups. Compared to CG, the number of monthly hypo- and hyperglycemias was reduced in TG. The intervention had a financial benefit for

patients living more than 100 km from the health care provider. CONCLUSIONS: Telemonitoring can result in reduction of HbA1c and frequency of hypo- and hyperglycemias. This beneficial effect is slightly attenuated 6 months after terminating telemonitoring.

Frade, S. et Rodrigues, H. (2013). "Benefits, challenges and impact of teleconsultation - a literature review." Stud Health Technol Inform **192**: 1157.

Teleconsultation involves the use of technology so that the medical professionals and patients can interact with each other bringing health to where ever it is needed. Although it has been demonstrated to be feasible and effective its sustainability remains an important question. This paper presents the results of a literature review on teleconsultation, based on the Portuguese context. Although Portugal has some successful projects, a national or international conjoint effort would be more fruitful. Technologically it gets lets costly to provide teleconsultation, as pervasive computing grows. The gap of benefits between teleconsultation and regular consultation will diminish as patients grow fonder into technology. The economic value of this type of consultation remains a difficult subject, so a small budget economic analysis, based on a break-even method, is suggested. This analysis conducted on Finland shows that teleconsultation can be cost-effective.

Fusco, F. et Turchetti, G. (2016). "Telerehabilitation after total knee replacement in Italy: cost-effectiveness and cost-utility analysis of a mixed telerehabilitation-standard rehabilitation programme compared with usual care." Bmj Open **6**(5): e009964.

OBJECTIVES: To assess cost-effectiveness and cost utility of telerehabilitation (TR) versus standard rehabilitation (SR) after total knee replacement (TKR). DESIGN: Markov decision modelling of cost-effectiveness and cost-utility analysis based on patient-level and secondary data sources employing Italian National Health Service (NHS; Ita-NHS) and Society perspectives. SETTING: Primary care units (PCUs) in Italy. PARTICIPANTS: Patients discharged after TKR. INTERVENTIONS: Mixed SR-TR service (10 face-to-face sessions and 10 telelessons) versus SR (20 face-to-face sessions) PRIMARY AND SECONDARY OUTCOME MEASURES: The incremental cost per additional knee flexion range of motion (ROM) and per QALY gained by SR-TR compared with SR. Second, we considered the probability of being cost-effective and the probability of being more effective and less expensive. RESULTS: TR appears to be the cost-effective in the base case and in all of the considered scenarios, but is no longer more effective and less expensive if transportation costs are excluded. Comparing SR-TR with SR, the incremental cost-effectiveness ratio (ICER) adopting the Ita-NHS perspective for the base case was -euro117/ROM gained. The cost-effectiveness probability for SR-TR was 0.98 (ceiling ratio: euro50/ROM), while the joint probability of being more effective and less expensive was 0.87. Assuming that TR would increase health-related quality of life (HRQOL) utilities by 2.5%, the ICER adopting Ita-NHS perspective is -euro960/QALY (cost-effectiveness probability: 1; ceiling ratio: euro30 000/QALY). All the performed sensitivity analyses did not change the conclusions, but if transportation costs were excluded, the probability for SR-TR of being more clinically effective and less expensive reduced to 0.56. CONCLUSIONS: The analysis suggested SR-TR to be cost-effective, even less expensive and more effective if the PCUs provide ambulance transportations. However, the uncertainty related to TR costs, HRQOL and long-term clinical outcomes raises important topics for future research, which should be addressed to confirm our estimates. TRIAL REGISTRATION NUMBER: ISRCTN45837371.

Gaidukova, I. Z., et al. (2016). "Advantages of remote monitoring the activity of patients with axial spondylitis (Progress study)." Klin Med (Mosk) **94**(4): 279-285.

To improve the quality of treatment of patients with spondyloarthrities based on analysis of adherence to therapy and its timely correction by regular remote monitoring the activity of the disease. MATERIALS AND METHODS: 46 patents with axial spondylitis (ankylosing spondylitis, non-radiographic spondylitis) were interviewed by phone once in 4 weeks for 18 months with a 3 month interval after 12 months. 96 patients underwent routine outpatient examination for the evaluation of the main parameters of the disease. RESULTS AND DISCUSSION: Arbitrarily examined patients with spondyloarthrites reported poor compliance with therapy and its low efficiency. During 18 months, 79% of the patients were recommended treatment with TNF-a inhibitors. Only 18.5% of them in the remote monitoring group failed to reach the BASDAI index S 4 whereas 73.9% of the patients

examined remotely for 1 year had low activity of the disease or its partial remission. An increased period between two phone interviews from 1 to 3 months in 58.6% patients with low activity of the disease was associated with impaired adherence to therapy (decreased intake of the anti-inflammatory drug or its withdrawal) that did not lead to enhancement of activity during 3 months after the change in the treatment. CONCLUSION: Remote monitoring of activity of the disease (one phone interview every 4 weeks) allows to decrease it or reach remission in 73.9% of the patients with axial spondyloarthritis. The decrease in the frequency of telephone calls to one every 3 months results in the impairment of compliance with therapy but does not lead to increase of disease activity in the short run.

Gibson, G., et al. (2016). "The provision of assistive technology products and services for people with dementia in the United Kingdom." *Dementia (London)* **15**(4): 681-701.

In this review we explore the provision of assistive technology products and services currently available for people with dementia within the United Kingdom. A scoping review of assistive technology products and services currently available highlighted 171 products or product types and 331 services. In addition, we assimilated data on the amount and quality of information provided by assistive technology services alongside assistive technology costs. We identify a range of products available across three areas: assistive technology used 'by', 'with' and 'on' people with dementia. Assistive technology provision is dominated by 'telecare' provided by local authorities, with services being subject to major variations in pricing and information provision; few currently used available resources for assistive technology in dementia. We argue that greater attention should be paid to information provision about assistive technology services across an increasingly mixed economy of dementia care providers, including primary care, local authorities, private companies and local/national assistive technology resources.

Giordano, A., et al. (2016). "Feasibility and cost-effectiveness of a multidisciplinary home-telehealth intervention programme to reduce falls among elderly discharged from hospital: study protocol for a randomized controlled trial." *BMC Geriatr* **16**(1): 209.

BACKGROUND: Fall incidents are the third cause of chronic disablement in elderly according to the World Health Organization (WHO). Recent meta-analyses shows that a multifactorial falls risk assessment and management programmes are effective in all older population studied. However, the application of these programmes may not be the same in all National health care setting and, consequently, needs to be evaluated by cost-effectiveness studies before to plan this intervention in regular care. In Italy structured collaboration between hospital staff and primary care is generally lacking and the role of Information and Communication Technologies (ICT) in a fall prevention programme at home has never been explored. METHODS AND DESIGN: This will be a two-group randomised controlled trial aiming to evaluate the effects of a home-based intervention programme delivered by a multidisciplinary health team. The home tele-management programme, previously adopted in our Institute for chronic patients, will be proposed to elderly people affected by chronic diseases at high risk of falling at hospital discharge. The programme will involve the hospital staff and will be managed thanks to the collaboration between hospital and primary care setting. Patients will be followed for 6 months after hospital discharge. A nurse-tutor telephone support and tele-exercise will characterize the intervention programme. People in the control group will receive usual care. The main outcome measure of the study will be the percentage of patients sustaining a fall during the 6-months follow-up period. An economic evaluation will be performed from a societal perspective and will involve calculating cost-effectiveness and cost utility ratios. DISCUSSION: To date, no adequately powered studies have investigated the effect of the Information and Communication Technologies (ICT) in a home fall prevention program. We aim the program will be feasible in terms of intensity and characteristics, but particularly in terms of patient and provider compliance. The results of the economic evaluation could provide information about the cost-effectiveness of the intervention and the effects on quality of life. In case of shown effectiveness and cost effectiveness, the program could be implemented into health services settings. TRIAL REGISTRATION: ClinicalTrials.gov (NCT02487589).

Goodridge, D. et Marciniuk, D. (2016). "Rural and remote care: Overcoming the challenges of distance." *Chron Respir Dis* **13**(2): 192-203.

The challenges of providing quality respiratory care to persons living in rural or remote communities can be daunting. These populations are often vulnerable in terms of both health status and access to care, highlighting the need for innovation in service delivery. The rapidly expanding options available using telehealthcare technologies have the capacity to allow patients in rural and remote communities to connect with providers at distant sites and to facilitate the provision of diagnostic, monitoring, and therapeutic services. Successful implementation of telehealthcare programs in rural and remote settings is, however, contingent upon accounting for key technical, organizational, social, and legal considerations at the individual, community, and system levels. This review article discusses five types of telehealthcare delivery that can facilitate respiratory care for residents of rural or remote communities: remote monitoring (including wearable and ambient systems; remote consultations (between providers and between patients and providers), remote pulmonary rehabilitation, telepharmacy, and remote sleep monitoring. Current and future challenges related to telehealthcare are discussed.

Guedon-Moreau, L., et al. (2014). "Costs of remote monitoring vs. ambulatory follow-ups of implanted cardioverter defibrillators in the randomized ECOST study." *Europace* **16**(8): 1181-1188.

AIMS: The Effectiveness and Cost of ICD follow-up Schedule with Telecardiology (ECOST) trial evaluated prospectively the economic impact of long-term remote monitoring (RM) of implantable cardioverter defibrillators (ICDs). **METHODS AND RESULTS:** The analysis included 310 patients randomly assigned to RM (active group) vs. ambulatory follow-ups (control group). Patients in the active group were seen once a year unless the system reported an event mandating an ambulatory visit, while patients in the control group were seen in the ambulatory department every 6 months. The costs of each follow-up strategy were compared, using the actual billing documents issued by the French health insurance system, including costs of (i) (a) ICD-related ambulatory visits and transportation, (b) other ambulatory visits, (c) cardiovascular treatments and procedures, and (ii) hospitalizations for the management of cardiovascular events. The ICD and RM system costs were calculated on the basis of the device remaining longevity at the end of the study. The characteristics of the study groups were similar. Over a follow-up of 27 months, the mean non-hospital costs per patient-year were euro1695 +/- 1131 in the active, vs. euro1952 +/- 1023 in the control group (P = 0.04), a euro257 difference mainly due to device management. The hospitalization costs per patient-year were euro2829 +/- 6382 and euro3549 +/- 9714 in the active and control groups, respectively (P = 0.46). Adding the ICD to the non-hospital costs, the savings were euro494 (P = 0.005) or, when the monitoring system was included, euro315 (P = 0.05) per patient-year. **CONCLUSION:** From the French health insurance perspective, the remote management of ICD patients is cost saving. **CLINICAL TRIALS REGISTRATION:** NCT00989417, www.clinicaltrials.gov.

Halcox, J. P. J., et al. (2017). "Assessment of Remote Heart Rhythm Sampling Using the AliveCor Heart Monitor to Screen for Atrial Fibrillation: The REHEARSE-AF Study." *Circulation* **136**(19): 1784-1794.

BACKGROUND: Asymptomatic atrial fibrillation (AF) is increasingly common in the aging population and implicated in many ischemic strokes. Earlier identification of AF with appropriate anticoagulation may decrease stroke morbidity and mortality. **METHODS:** We conducted a randomized controlled trial of AF screening using an AliveCor Kardia monitor attached to a WiFi-enabled iPod to obtain ECGs (iECGs) in ambulatory patients. Patients ≥ 65 years of age with a CHADS-VASc score ≥ 2 free from AF were randomized to the iECG arm or routine care (RC). iECG participants acquired iECGs twice weekly over 12 months (plus additional iECGs if symptomatic) onto a secure study server with overread by an automated AF detection algorithm and by a cardiac physiologist and/or consultant cardiologist. Time to diagnosis of AF was the primary outcome measure. The overall cost of the devices, ECG interpretation, and patient management were captured and used to generate the cost per AF diagnosis in iECG patients. Clinical events and patient attitudes/experience were also evaluated. **RESULTS:** We studied 1001 patients (500 iECG, 501 RC) who were 72.6 +/- 5.4 years of age; 534 were female. Mean CHADS-VASc score was 3.0 (heart failure, 1.4%; hypertension, 54%; diabetes mellitus, 30%; prior stroke/transient ischemic attack, 6.5%; arterial disease, 15.9%; all CHADS-VASc risk factors were evenly distributed between groups). Nineteen patients in the iECG group were diagnosed with AF over the 12-month study period versus 5 in the RC arm (hazard ratio, 3.9; 95%

confidence interval=1.4-10.4; P=0.007) at a cost per AF diagnosis of \$10 780 (pound8255). There was a similar number of stroke/transient ischemic attack/systemic embolic events (6 versus 10, iECG versus RC; hazard ratio=0.61; 95% confidence interval=0.22-1.69; P=0.34). The majority of iECG patients were satisfied with the device, finding it easy to use without restricting activities or causing anxiety. CONCLUSIONS: Screening with twice-weekly single-lead iECG with remote interpretation in ambulatory patients ≥ 65 years of age at increased risk of stroke is significantly more likely to identify incident AF than RC over a 12-month period. This approach is also highly acceptable to this group of patients, supporting further evaluation in an appropriately powered, event-driven clinical trial. CLINICAL TRIAL REGISTRATION: URL: <https://www.isrctn.com>. Unique identifier: ISRCTN10709813.

Haluza, D., et al. (2016). "Prevailing Opinions on Connected Health in Austria: Results from an Online Survey." *Int J Environ Res Public Health* **13**(8).

New technological developments affect almost every sector of our daily lives, including the healthcare sector. We evaluated how connected health applications, subsumed as eHealth and telemedicine, are perceived in relation to socio-demographic characteristics. The current cross-sectional, online survey collected self-reported data from a non-probability convenience sample of 562 Austrian adults (58.9% females). The concept of eHealth and telemedicine was poorly established among the study population. While most participants already used mobile devices, they expressed a quite low desirability of using various telemedicine applications in the future. Study participants perceived that the most important overall benefits for implementing connected health technology were better quality of healthcare, location-independent access to healthcare services, and better quality of life. The respective three top-ranked overall barriers were data security, lack of acceptance by doctors, and lack of technical prerequisites. With regard to aging societies, healthcare providers, and users alike could take advantage of inexpensive, consumer-oriented connected health solutions that address individual needs of specific target groups. The present survey identified issues relevant for successful implementation of ICT-based healthcare solutions, providing a compilation of several areas requiring further in-depth research.

Han, S., et al. (2014). "Benefits of mobile reporting systems in social home care: the case of seven Swedish municipalities." *Int J Technol Assess Health Care* **30**(4): 409-415.

OBJECTIVES: Mobile systems are widely adopted in healthcare services. Mobile reporting systems have been recently introduced for social home care by municipalities in Sweden. The study aims to assess the benefits of using these systems. METHODS: We followed an expert survey approach. Data were collected by means of telephone interviews with the experts in charge of managing and implementing the systems at the municipalities. In addition, several workshops were organized for assessing the economic value of the systems at one municipality. We performed thematic analysis and cost-benefit analysis of the data. RESULTS: The thematic analysis showed the three main benefits of using the mobile reporting systems in social home care: municipal benefits, care providers' benefits, and care recipients' benefits. The cost-benefit analysis indicated that the systems could bring substantial long-term economic value for municipalities. The results also revealed the difficulties encountered at the early stage of the deployment and implementation of the systems. CONCLUSIONS: The mobile systems yield benefits for all the actors, that is, municipalities, care recipients and care providers. These enhance the public-private coordination and cooperation in social home care in Sweden. The municipalities are called upon to address change management and technical challenges in the implementation.

Hazenbergh, A., et al. (2014). "Initiation of home mechanical ventilation at home: a randomised controlled trial of efficacy, feasibility and costs." *Respir Med* **108**(9): 1387-1395.

INTRODUCTION: Home mechanical ventilation (HMV) in the Netherlands is normally initiated in hospital, but this is expensive and often a burden for the patient. In this randomised controlled study we investigated whether initiation of HMV at home in patients with chronic respiratory failure is non-inferior to an in hospital based setting. METHODS: Seventy-seven patients were included, of which 38 patients started HMV at home. All patients were diagnosed with chronic respiratory failure due to a neuromuscular or thoracic cage disease. Primary outcome was the arterial carbon dioxide (PaCO₂)

while quality of life and costs were secondary outcomes. Telemonitoring was used in the home group to provide therapeutic information, for example; transcutaneous carbon dioxide, oxygen saturation and ventilator information, to the caregivers. Follow-up was six months. RESULTS: PaCO₂, improved by 0.72 (SE +/- 0.16) kPa in the hospital group and by 0.91 (+/-0.20) in the home group, both improvements being significant and the latter clearly not inferior. There were also significant improvements in quality of life in both groups, again not being inferior with home treatment. CONCLUSION: This study is the first to show that initiation of HMV at home in a selective group of patients with chronic respiratory failure is as effective for gas exchange and quality of life as hospital initiation. In addition we found that it is safe, technically feasible and that more than euro 3000 per patient can be saved compared to our standard care.

Hegerl, U., et al. (2016). "[From the Competence Network on Depression and Suicidality to the German Depression Foundation. National and international prevention of suicidal behaviour and optimizing health care through using of EMental-Health]." Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz **59**(4): 406-411.

Depression is a very common, severe, socio-economically highly relevant disorder and the main cause for approximately 10,000 suicides in Germany annually. There is capital room for improvement and optimization of the care for depressed patients, as effective and evidence-based treatment options are available. However, they are only used optimally by a minority of the people affected due to huge diagnostic and therapeutic deficits. The "Competence Network on Depression and Suicidality" provided several evidence-based concepts to improve care for patients affected by depression and to prevent suicidal behaviour. Especially the four-level intervention approach of the Alliances Against Depression has been successfully adapted and implemented by more than 100 regions within Europe and globally as well. The infrastructure of the Competence Network could be efficiently sustained throughout the establishment of the German Depression Foundation and the European Alliance against Depression. Since 2014, all research activities have been extended nationally and internationally by the establishment of a Depression Research Centre with a special focus on various EMental-Health-projects.

Henderson, C., et al. (2014). "Cost-effectiveness of telecare for people with social care needs: the Whole Systems Demonstrator cluster randomised trial." Age Ageing **43**(6): 794-800.

PURPOSE OF THE STUDY: to examine the costs and cost-effectiveness of 'second-generation' telecare, in addition to standard support and care that could include 'first-generation' forms of telecare, compared with standard support and care that could include 'first-generation' forms of telecare. DESIGN AND METHODS: a pragmatic cluster-randomised controlled trial with nested economic evaluation. A total of 2,600 people with social care needs participated in a trial of community-based telecare in three English local authority areas. In the Whole Systems Demonstrator Telecare Questionnaire Study, 550 participants were randomised to intervention and 639 to control. Participants who were offered the telecare intervention received a package of equipment and monitoring services for 12 months, additional to their standard health and social care services. The control group received usual health and social care. PRIMARY OUTCOME MEASURE: incremental cost per quality-adjusted life year (QALY) gained. The analyses took a health and social care perspective. RESULTS: cost per additional QALY was pound297,000. Cost-effectiveness acceptability curves indicated that the probability of cost-effectiveness at a willingness-to-pay of pound30,000 per QALY gained was only 16%. Sensitivity analyses combining variations in equipment price and support cost parameters yielded a cost-effectiveness ratio of pound161,000 per QALY. IMPLICATIONS: while QALY gain in the intervention group was similar to that for controls, social and health services costs were higher. Second-generation telecare did not appear to be a cost-effective addition to usual care, assuming a commonly accepted willingness to pay for QALYs. TRIAL REGISTRATION NUMBER: ISRCTN 43002091.

Henderson, C., et al. (2013). "Cost effectiveness of telehealth for patients with long term conditions (Whole Systems Demonstrator telehealth questionnaire study): nested economic evaluation in a pragmatic, cluster randomised controlled trial." Bmj **346**: f1035.

OBJECTIVE: To examine the costs and cost effectiveness of telehealth in addition to standard support and treatment, compared with standard support and treatment. **DESIGN:** Economic evaluation nested in a pragmatic, cluster randomised controlled trial. **SETTING:** Community based telehealth intervention in three local authority areas in England. **PARTICIPANTS:** 3230 people with a long term condition (heart failure, chronic obstructive pulmonary disease, or diabetes) were recruited into the Whole Systems Demonstrator telehealth trial between May 2008 and December 2009. Of participants taking part in the Whole Systems Demonstrator telehealth questionnaire study examining acceptability, effectiveness, and cost effectiveness, 845 were randomised to telehealth and 728 to usual care. **INTERVENTIONS:** Intervention participants received a package of telehealth equipment and monitoring services for 12 months, in addition to the standard health and social care services available in their area. Controls received usual health and social care. **MAIN OUTCOME MEASURE:** Primary outcome for the cost effectiveness analysis was incremental cost per quality adjusted life year (QALY) gained. **RESULTS:** We undertook net benefit analyses of costs and outcomes for 965 patients (534 receiving telehealth; 431 usual care). The adjusted mean difference in QALY gain between groups at 12 months was 0.012. Total health and social care costs (including direct costs of the intervention) for the three months before 12 month interview were pound1390 (euro1610; \$2150) and pound1596 for the usual care and telehealth groups, respectively. Cost effectiveness acceptability curves were generated to examine decision uncertainty in the analysis surrounding the value of the cost effectiveness threshold. The incremental cost per QALY of telehealth when added to usual care was pound92 000. With this amount, the probability of cost effectiveness was low (11% at willingness to pay threshold of pound30 000; >50% only if the threshold exceeded about pound90 000). In sensitivity analyses, telehealth costs remained slightly (non-significantly) higher than usual care costs, even after assuming that equipment prices fell by 80% or telehealth services operated at maximum capacity. However, the most optimistic scenario (combining reduced equipment prices with maximum operating capacity) eliminated this group difference (cost effectiveness ratio pound12 000 per QALY). **CONCLUSIONS:** The QALY gain by patients using telehealth in addition to usual care was similar to that by patients receiving usual care only, and total costs associated with the telehealth intervention were higher. Telehealth does not seem to be a cost effective addition to standard support and treatment. **TRIAL REGISTRATION:** ISRCTN43002091.

Hendy, J., et al. (2012). "An organisational analysis of the implementation of telecare and telehealth: the whole systems demonstrator." *Bmc Health Services Research* **12**: (21), fig.

<http://www.biomedcentral.com/content/pdf/1472-6963-12-403.pdf>

Cette étude examine les facteurs organisationnels associés à l'implantation de services de télésanté.

L'analyse est basée sur des études de cas provenant des trois sites qui forment le Whole Systems Demonstrator (WSD), programme du ministère de la Santé britannique.

Hendy, J., et al. (2012). "An organisational analysis of the implementation of telecare and telehealth: the whole systems demonstrator." *BMC Health Serv Res* **12**: 403.

BACKGROUND: To investigate organisational factors influencing the implementation challenges of redesigning services for people with long term conditions in three locations in England, using remote care (telehealth and telecare). **METHODS:** Case-studies of three sites forming the UK Department of Health's Whole Systems Demonstrator (WSD) Programme. Qualitative research techniques were used to obtain data from various sources, including semi-structured interviews, observation of meetings over the course programme and prior to its launch, and document review. Participants were managers and practitioners involved in the implementation of remote care services. **RESULTS:** The implementation of remote care was nested within a large pragmatic cluster randomised controlled trial (RCT), which formed a core element of the WSD programme. To produce robust benefits evidence, many aspect of the trial design could not be easily adapted to local circumstances. While remote care was successfully rolled-out, wider implementation lessons and levels of organisational learning across the sites were hindered by the requirements of the RCT. **CONCLUSIONS:** The implementation of a complex innovation such as remote care requires it to organically evolve, be responsive and adaptable to the local health and social care system, driven by support from front-line staff and management. This need for evolution was not always aligned with the imperative to gather robust benefits evidence. This tension needs to be resolved if government ambitions for the evidence-based scaling-up of remote care are to be realised.

Hirani, S. P., et al. (2014). "The effect of telecare on the quality of life and psychological well-being of elderly recipients of social care over a 12-month period: the Whole Systems Demonstrator cluster randomised trial." *Age Ageing* **43**(3): 334-341.

BACKGROUND: home-based telecare (TC) is utilised to manage risks of independent living and provide prompt emergency responses. This study examined the effect of TC on health-related quality of life (HRQoL), anxiety and depressive symptoms over 12 months in patients receiving social care. **DESIGN:** a study of participant-reported outcomes [the Whole Systems Demonstrator (WSD) Telecare Questionnaire Study; baseline n = 1,189] was nested in a pragmatic cluster-randomised trial of TC (the WSD Telecare trial), held across three English Local Authorities. General practice (GP) was the unit of randomisation and TC was compared with usual care (UC). **METHODS:** participant-reported outcome measures were collected at baseline, short-term (4 months) and long-term (12 months) follow-up, assessing generic HRQoL, anxiety and depressive symptoms. Primary intention-to-treat analyses tested treatment effectiveness and were conducted using multilevel models to control for GP clustering and covariates for participants who completed questionnaire measures at baseline assessment plus at least one other assessment (n = 873). **RESULTS:** analyses found significant differences between TC and UC on Short Form-12 mental component scores (P < 0.05), with parameter estimates indicating being a member of the TC trial-arm increases mental component scores (UC-adjusted mean = 40.52; TC-adjusted mean = 43.69). Additional significant analyses revealed, time effects on EQ5D (decreasing over time) and depressive symptoms (increasing over time). **CONCLUSIONS:** TC potentially contributes to the amelioration in the decline in users' mental HRQoL over a 12-month period. TC may not transform the lives of its users, but it may afford small relative benefits on some psychological and HRQoL outcomes relative to users who only receive UC. International Standard Randomised Controlled Trial Number Register: ISRCTN 43002091.

Hofer, F., et al. (2016). "Cost-Utility Analysis of Telemonitoring Interventions for Patients with Chronic Obstructive Pulmonary Disease (COPD) in Germany." *Appl Health Econ Health Policy* **14**(6): 691-701.

BACKGROUND: Chronic obstructive pulmonary disease (COPD) poses major challenges for health care systems. Previous studies suggest that telemonitoring could be effective in preventing hospitalisations and hence reduce costs. **OBJECTIVE:** The aim was to evaluate whether telemonitoring interventions for COPD are cost-effective from the perspective of German statutory sickness funds. **METHODS:** A cost-utility analysis was conducted using a combination of a Markov model and a decision tree. Telemonitoring as add-on to standard treatment was compared with standard treatment alone. The model consisted of four transition stages to account for COPD severity, and a terminal stage for death. Within each cycle, the frequency of exacerbations as well as outcomes for 2015 costs and quality adjusted life years (QALYs) for each stage were calculated. Values for input parameters were taken from the literature. Deterministic and probabilistic sensitivity analyses were conducted. **RESULTS:** In the base case, telemonitoring led to an increase in incremental costs (euro866 per patient) but also in incremental QALYs (0.05 per patient). The incremental cost-effectiveness ratio (ICER) was thus euro17,410 per QALY gained. A deterministic sensitivity analysis showed that hospitalisation rate and costs for telemonitoring equipment greatly affected results. The probabilistic ICER averaged euro34,432 per QALY (95 % confidence interval 12,161-56,703). **CONCLUSION:** We provide evidence that telemonitoring may be cost-effective in Germany from a payer's point of view. This holds even after deterministic and probabilistic sensitivity analyses.

Hofmann, R., et al. (2015). "First outline and baseline data of a randomized, controlled multicenter trial to evaluate the health economic impact of home telemonitoring in chronic heart failure - CardioBBEAT." *Trials* **16**: 343.

BACKGROUND: Evidence that home telemonitoring for patients with chronic heart failure (CHF) offers clinical benefit over usual care is controversial as is evidence of a health economic advantage. **METHODS:** Between January 2010 and June 2013, patients with a confirmed diagnosis of CHF were enrolled and randomly assigned to 2 study groups comprising usual care with and without an interactive bi-directional remote monitoring system (Motiva(R)). The primary endpoint in CardioBBEAT is the Incremental Cost-Effectiveness Ratio (ICER) established by the groups' difference in total cost

and in the combined clinical endpoint "days alive and not in hospital nor inpatient care per potential days in study" within the follow-up of 12 months. RESULTS: A total of 621 predominantly male patients were enrolled, whereof 302 patients were assigned to the intervention group and 319 to the control group. Ischemic cardiomyopathy was the leading cause of heart failure. Despite randomization, subjects of the control group were more often in NYHA functional class III-IV, and exhibited peripheral edema and renal dysfunction more often. Additionally, the control and intervention groups differed in heart rhythm disorders. No differences existed regarding risk factor profile, comorbidities, echocardiographic parameters, especially left ventricular and diastolic diameter and ejection fraction, as well as functional test results, medication and quality of life. While the observed baseline differences may well be a play of chance, they are of clinical relevance. Therefore, the statistical analysis plan was extended to include adjusted analyses with respect to the baseline imbalances. CONCLUSIONS: CardioBBEAT provides prospective outcome data on both, clinical and health economic impact of home telemonitoring in CHF. The study differs by the use of a high evidence level randomized controlled trial (RCT) design along with actual cost data obtained from health insurance companies. Its results are conducive to informed political and economic decision-making with regard to home telemonitoring solutions as an option for health care. Overall, it contributes to developing advanced health economic evaluation instruments to be deployed within the specific context of the German Health Care System. TRIAL REGISTRATION: ClinicalTrials.gov NCT02293252 ; date of registration: 10 November 2014.

Hollmark, M., et al. (2015). "Technology Ready to be Launched, but is there a Payer? Challenges for Implementing eHealth in Sweden." *Stud Health Technol Inform* **211**: 57-68.

The development of a sustainable, high-quality, affordable health care is today a high priority for many actors in the society. This is to ensure that we will continue to afford to care for the growing portion of elderly in our population. One solution is to enable the individual's power over her own health or illness, and participation in her own care. There are evidently opportunities with the rapid development of eHealth and wearable sensors. Tracking and measuring vital data can help to keep people out of the hospital. Loads of data is generated to help us understand disease, to provide us with early diagnostics and warnings. It is providing us with possibilities to collect and capture the true health status of individuals. Successful technologies demonstrate savings, acceptance among users and improved access to healthcare. But there are also challenges. Implementing new technologies in health care is difficult. Researchers from around the world are reporting on similar problems, such as reimbursement, interoperability, usability and regulatory issues. This paper will discuss a few of these implementation challenges as well as a few of the efforts in meeting them. To conclude, eHealth solutions can contribute to patient empowerment and a sustainable health care. Our assumption is however, that as long as we do not face the implementation challenges and invest in overcoming the pressing obstacles, society will not be able, or willing, to pay for the solutions.

HOPE (2012). Personalised Medicine in European Hospitals. Bruxelles HOPE: 47 , cartes.

http://www.hope.be/05eventsandpublications/docpublications/87_better_health/87_HOPE_Publication-Better_health_October_2011.pdf

Si elle est encore aux prémices de son déploiement, la médecine personnalisée est déjà une réalité. De la prévention jusqu'au soin, elle a vocation à fournir le plus rapidement possible un diagnostic et un traitement personnalisés aux patients. Elle regroupe les produits et services qui s'appuient sur la génomique et la protéomique et exploitent les tendances actuelles orientées vers le bien-être et le patient acteur de sa santé. Selon l'étude PwC réalisée en association avec HOPE (European Hospital and Healthcare Federation) dans six pays européens : France, Hongrie, Slovaquie, Espagne, Danemark, Finlande, de nombreux hôpitaux européens ont élaboré, chacun avec une conception différente, une stratégie de déploiement de la médecine personnalisée. En France, le CHU de Dijon, a opté pour le développement de plateformes d'optimisation des diagnostics et des traitements ainsi que pour des programmes de télémédecine en pathologie et en neurologie. Son développement constitue un défi majeur pour l'ensemble du secteur de la santé. L'étude définit ainsi trois priorités : investir de nouveaux champs de recherche, par exemple dans le domaine de la génétique ; intégrer de nouvelles technologies comme l'imagerie ; faire évoluer la culture et les comportements des professionnels de santé et du patient pour en faire un acteur de sa santé.

Huston, J. L. (2005). "Information governance standards for managing e-health information." J Telemed Telecare **11 Suppl 2**: S56-58.

Integrity of patient information, from both a quality and a security perspective, is critical to patient care. In the UK, the information governance initiative of the National Health Service (NHS) provides a framework to monitor and control the management of confidential patient data. Information governance standards grew out of the Data Accreditation Programme, first proposed in the 1998 NHS document Information for Health. The Data Accreditation Programme was based on a three-stage assessment of data quality in acute hospitals. Stage one required internal review of policy and procedures for data input into computerized patient administration systems. Stage two involved an external audit to verify compliance with the standards. Stage three mandated audits of data outputs, focusing on clinical coding quality. Before stage three of the programme was fully implemented, the standards were incorporated into the information governance initiative, in which standards were expanded to include primary care and other health-care settings. These standards address many information management issues, including security and data quality, which are key concerns in telemedicine and e-health applications. Compliance is essential for the successful implementation of the NHS Care Records Service, which will allow sharing of electronically stored patient information across the UK.

Hutting, N., et al. (2013). "A self-management program for employees with complaints of the arm, neck, or shoulder (CANS): study protocol for a randomized controlled trial." Trials **14**: 258.

BACKGROUND: Complaints of the arm, neck, or shoulder (CANS) have a multifactorial origin and cause considerable work problems, including decreased work productivity, sickness absence, and, ultimately, job loss. There is a need for intervention programs for people with CANS. Self-management is an approach used in chronic disease care to improve self-efficacy and wellness behaviors to facilitate participants to make informed choices and carry them out. This study will evaluate the effectiveness of a self-management program (including ehealth) and compare it to usual care among employees with chronic CANS (lasting >3 months). METHODS/DESIGN: This is a randomized controlled trial in which 142 participants will be recruited and randomized (with pre-stratification) to either the intervention group (IG) or control group (CG). The IG will participate in a self-management program consisting of six group sessions and an ehealth module. The CG is allowed to use all usual care available. The primary outcome of the study is the self-reported disability of arm, shoulder, and hand, measured with the Disabilities of the Arm, Shoulder and Hand questionnaire (DASH). Secondary outcomes include: absenteeism, pain in the previous week, quality of life, catastrophizing pain, self-efficacy, workstyle, presenteeism, fatigue, the use of usual care, and limitations experienced on the job. Data are collected at baseline and at 3, 6, and 12 months follow-up. DISCUSSION: Following the process of intervention mapping we developed a self-management program to suit and alleviate the problems and needs of employees with CANS. A strength of the study is that our intervention is specifically tailored to match the needs of employees with CANS. The study also has some potential weaknesses (for example, use of co-interventions, combination of group sessions and ehealth, self-reporting of data and possible contamination, Hawthorne effect, and recall or information bias) which are discussed. TRIAL REGISTRATION: The trial is registered with the Dutch Trial Register (<http://www.trialregister.nl/NTR3816>): (January 2013). The first participant was randomized in September 2012.

Invernizzi, A., et al. (2016). "Diabetic retinopathy screening: the first telemedical approach in an Italian hospital." Eur J Ophthalmol **26**(4): 369-374.

PURPOSE: To assess the feasibility of a telemedical approach for diabetic retinopathy (DR) screening in the Italian population and to evaluate advantages/disadvantages in comparison to standard slit-lamp funduscopic examination (SFE). METHODS: This 1-year, Italian, single-center, observational study evaluated semiautomatic fundus photography (FP) DR screening, performed during routine type 2 diabetes (T2D) systemic visits and examined remotely. Adults with T2D underwent SFE and 3-field FP. The study was divided into 2 stages (stage 1 validated the screening procedure, stage 2 evaluated the screening impact on the clinical practice). Annual costs of SFE +/- FP screening were compared.

Patients completed a DR screening questionnaire. RESULTS: Of 1,281 T2D patients enrolled, 61% were male (mean age 65.69 +/- 12.64 years). In stage 1, 71% and 15% of patients were considered nongradable when FP was performed before (BPD) versus after pupil dilation (APD). The FP specificity was higher with APD vs BPD (79% vs 25%); therefore, FP APD only was used for stage 2. Of 1,281 patients screened using FP APD, 240 (18.7%) had unreadable images; 64.3% did not have DR, and 17.0% were diagnosed with DR. There was a cost saving of euro801.25 when screening was performed using FP. Overall, 98% of patients had a positive opinion of FP screening. CONCLUSIONS: The telemedicine approach provides a convenient, simple test that is well-received by patients and minimizes unnecessary referrals. Telemedicine may also reduce screening costs in our setting.

Irgens, I., et al. (2015). "Telemedicine brings specialist healthcare services to patients' homes." Tidsskr Nor Laegeforen **135**(19): 1716-1717.

Isetta, V., et al. (2013). "Cost-effectiveness of a new internet-based monitoring tool for neonatal post-discharge home care." J Med Internet Res **15**(2): e38.

BACKGROUND: The application of information and communication technologies in nursing care is becoming more widespread, but few applications have been reported in neonatal care. A close monitoring of newborns within the first weeks of life is crucial to evaluating correct feeding, growth, and health status. Conventional hospital-based postdischarge monitoring could be improved in terms of costs and clinical effectiveness by using a telemedicine approach. OBJECTIVE: To evaluate the cost-effectiveness of a new Internet-based system for monitoring low-risk newborns after discharge compared to the standard hospital-based follow-up, with specific attention to prevention of emergency department (ED) visits in the first month of life. METHODS: We performed a retrospective cohort study of two low-risk newborn patient groups. One group, born between January 1, 2011, and June 30, 2011, received the standard hospital-based follow-up visit within 48 hours after discharge. After implementing an Internet-based monitoring system, another group, born between July 19, 2011, and January 19, 2012, received their follow-up with this system. RESULTS: A total of 18 (15.8%) out of 114 newborns who received the standard hospital-based follow-up had an ED visit in the first month of life compared with 5 (5.6%; P=.026) out of 90 infants who were monitored by the Internet-based system. The cost of the hospital-based follow-up was 182.1euro per patient, compared with 86.1euro for the Internet-based follow-up. CONCLUSION: Our Internet-based monitoring approach proved to be both more effective and less costly than the conventional hospital-based follow-up, particularly through reducing subsequent ED visits.

Jackson, B. D., et al. (2016). "EHealth Technologies in Inflammatory Bowel Disease: A Systematic Review." J Crohns Colitis **10**(9): 1103-1121.

BACKGROUND AND AIMS: Electronic-health technologies (eHealth) such as Web-based interventions, virtual clinics, smart-phone applications, and telemedicine are being used to manage patients with inflammatory bowel disease (IBD). We aimed to: (1) Evaluate the impact of eHealth technologies on conventional clinical indices and patient-reported outcome measures (PROs) in IBD; (2) assess the effectiveness, cost-effectiveness and feasibility of using eHealth technologies to facilitate the self-management of individuals with IBD, and; (3) provide recommendations for their design and optimal use for patient care. METHODS: Relevant publications were identified via a literature search, and 17 publications were selected based on predefined quality parameters. RESULTS: Six randomized controlled trials and nine observational studies utilizing eHealth technologies in IBD were identified. Compared with standard outpatient-led care, eHealth technologies have led to improvements in: Relapse duration [(n = 1) 18 days vs 77 days, p < 0.001]; disease activity (n = 2); short-term medication adherence (n = 3); quality of life (n = 4); IBD knowledge (n = 2); healthcare costs (n = 4); the number of acute visits to the outpatient clinic due to IBD symptoms (n = 1), and; facilitating the remote management of up to 20% of an IBD cohort (n = 2). Methodological shortcomings of eHealth studies include heterogeneity of outcome measures, lack of clinician/patient input, lack of validation against conventional clinical indices and PROs, and limited cost-benefit analyses. CONCLUSIONS: EHealth technologies have the potential for promoting self-management and reducing the impact of the growing burden of IBD on health care resource utilization. A theoretical framework should be applied to the development, implementation, and evaluation of eHealth interventions.

Jacobs, J. J., et al. (2013). "[Teleradiology in a family practice on the Dutch island of Ameland: a cost-benefit analysis]." *Ned Tijdschr Geneeskd* **156**(51): A5428.

OBJECTIVE: To calculate the costs and benefits of the introduction of teleradiology at a general practice on the Dutch island of Ameland from the perspectives of three different entities: (a) the family doctor (investor); (b) patients; and (c) health insurance companies. **DESIGN:** Descriptive, cost-benefit analysis. **METHOD:** For the year 2009, one and a half years after the introduction of a teleradiology facility at a general practice in Ameland, the operational and financing costs, the patient's saved travel time and expenses and the teleradiology costs for health insurance companies were compared with the costs that would have been made without teleradiology. **RESULTS:** In 2009, 426 X-rays had been taken at the general practice of which 241 for trauma and 185 for non-traumatic cases. With a reimbursement of euro 100 per X-ray taken during normal working hours and euro 200 for those taken during evenings and weekends, benefits for the family doctor (investor) were euro 46,698 and the costs amounted to euro 45,710, or a positive balance of euro 980. Patients' savings in travel time and expenses were calculated at euro 111,068. Health insurance companies reimbursed a minimum of euro 89,265 less on diagnosis and treatment. **CONCLUSION:** The introduction of teleradiology a general practice in Ameland resulted in a considerable cost reduction for patients as well as for health insurance companies. In the future, diagnosing in this manner could be expanded in particular to regions in which the distances to hospitals are greater: a part of secondary healthcare could be conducted at a reduced cost.

Jakobsen, A. S., et al. (2013). "Hospital-admitted COPD patients treated at home using telemedicine technology in The Virtual Hospital Trial: methods of a randomized effectiveness trial." *Trials* **14**: 280.

BACKGROUND: Recent reviews suggest that telemedicine solutions for patients with chronic obstructive pulmonary disease (COPD) may prevent hospital readmissions and emergency room visits and improve health-related quality of life. However, the studies are few and only involve COPD patients who are in a stable phase or in-patients who are ready for discharge. COPD patients hospitalized with an acute exacerbation may also benefit from telemedicine solutions. The overall aim is to investigate a telemedicine-based treatment solution for patients with acute exacerbation of COPD at home as compared to conventional hospital treatment measured according to first treatment failure, which is defined as readmission due to COPD within 30 days after discharge. **METHODS:** COPD patients with acute exacerbation who fulfilled the eligibility criteria and were from two university hospitals in Denmark were randomized (1:1) by computer-generated tables that allocated treatments in blocks of four to receive either standard treatment at the hospital or the same standard treatment at home using telemedicine technology (that is, a video conference system with a touch screen and webcam and monitoring equipment (spirometer, thermometer, and pulse oximeter)). Patients treated in the telemedicine group were backed up by an organizational setting securing 24/7/365 online access to the hospital, as well as access to oxygen, nebulizer therapy, oral medical therapy and surveillance of vital parameters from home monitoring devices. Patients in both groups were discharged when clinically stable and when fulfilling five pre-specified discharge criteria. Follow-up was performed at 1, 3 and 6 months after discharge. **RESULTS:** Enrollment of patients started in June 2010 and ended in December 2011. Follow-up ended in May 2012. Results were analyzed in 2013. **CONCLUSIONS:** The results may have implications on future hospital treatment modalities for patients with severe exacerbations in COPD where telemedicine may be used as an alternative to conventional admission. **TRIAL REGISTRATION:** Clinical Trials NCT01155856.

Jakobsen, N. K., et al. (2014). "Collaborative efforts are needed to ensure proper knowledge dissemination of telemedicine projects." *Dan Med J* **61**(9): A4896.

INTRODUCTION: Telemedicine is often seen as the solution to the challenge of providing health care for an increasing number of people with chronic conditions. Projects are often organised locally and based on the involvement of stakeholders with a wide range of backgrounds. It can be challenging to ensure that projects are based on previous experience and that they do not repeat previous studies. To better understand these challenges and current practice, we examined telemedicine projects funded in the 2008-2010 period to explore where, how and to what extent results from the projects

were documented and disseminated. MATERIAL AND METHODS: Public and private funds were contacted for information about telemedicine studies focusing on people residing in their homes. After an initial screening of titles and abstracts, 19 projects were identified. The managers of the projects were contacted and information about project results and dissemination were obtained. RESULTS: More than half of all projects were disseminated to professionals as well as to the public and used two-way communication. However, it was generally difficult to obtain an overview of the projects due to dynamic changes in names and scopes. CONCLUSION: We propose that the funding authorities require designs comprising proper evaluation models that will subsequently allow the investigators to publish their findings. Furthermore, a dissemination plan comprising both peers and other professions should be made mandatory. The investigators should ensure proper documentation and dissemination of changes both during and after the projects in order to ensure transparency, and national or international organisations should establish a database with relevant data fields. FUNDING: not relevant. TRIAL REGISTRATION: not relevant.

Jakovljevic, M., et al. (2015). "Radiation therapy remains the key cost driver of oncology inpatient treatment." *J Med Econ* **18**(1): 29-36.

OBJECTIVE: Current radiation therapy capacities in Serbia and most of Eastern Europe are heavily lagging behind population needs. The primary study aim was assessment of direct costs of cancer medical care for patients suffering from cancer with assigned radiotherapy-based treatment protocols. Identification of key cost drivers and trends during 2010-2013 comparing brachytherapy and teleradiotherapy was a secondary objective of the study. METHODS: Retrospective, bottom-up database analysis was conducted on electronic discharge invoices. Payer's perspective has been adopted with a 1-year long time horizon. Total sample size was 2544 patients during a 4-years long observation period (2010-2013). The sample consisted of all patients with confirmed malignancy disorder receiving inpatient radiation therapy in a large university hospital. RESULTS: Diagnostics and treatment cost of cancer in the largest Western Balkans market of Serbia were heavily dominated by radiation therapy related direct medical costs. Total costs of care as well as mean cost per patient were steadily decreasing due to budget cuts caused by global recession. The paradox is that at the same time the budget share of radiotherapy increased for almost 15% and in value-based terms for euro109 per patient (in total euro109,330). Second ranked cost drivers were nursing care and imaging diagnostics. Costs of high-tech visualizing examinations were heavily dominated by nuclear medicine tests. CONCLUSION: The budget impact of radiation oncology to the large tertiary care university clinics of the Balkans is likely to remain significant in the future. Brachytherapy exhibited a slow growth pattern, while teleradiotherapy remained stable in terms of value-based turnover of medical services. Upcoming heavy investment into the national network of radiotherapy facilities will emphasize the unsatisfied needs. Huge contemporary budget share of radiotherapy coupled with rising cancer prevalence brings this issue into the hot spot of the ongoing cost containment efforts by local governments.

Jeurissen, P. P., et al. (2016). "[Towards a sustainable, cost-effective mental health care; a policy perspective]." *Tijdschr Psychiatr* **58**(10): 683-687.

BACKGROUND: After a decade of robust growth in spending, Dutch mental healthcare is on a more stricter budgetary path since 2012. High prevalence of illness and limited spending, imply the need for efficient mental healthcare delivery. AIM: To advise how mental health care can be managed more efficiently. There will also have to be more differentiation between mild and serious psychiatric illnesses. METHOD: Review of academic articles and policy studies. RESULTS: With regard to the treatment of fairly common disorders, more attention needs to be given to integrated basic care and e-health. Employers and stakeholders can perhaps play a role in financing some of these services. Severe mental disorders can be handled more often on an integrated ambulatory basis setting than only in a hospital setting, while scaling down inpatient capacity. These steps would represent a major transition and would require spending cuts and a change in the provider 'landscape'. CONCLUSION: Sustainable mental healthcare is inseparably linked to an agenda that provides value for money and it implies a major transition. However, in principle, it should be possible to fit these changes into the current system of governance. More attention needs to be given to coordination between the various

domains, and to a reduction in administrative costs. Reimbursement methods should align e-health, collaborative care, case-management and best-practice pathways.

Kaambwa, B., et al. (2014). "Telemonitoring and self-management in the control of hypertension (TASMINH2): a cost-effectiveness analysis." *Eur J Prev Cardiol* **21**(12): 1517-1530.

AIMS: Self-monitoring and self-titration of antihypertensives (self-management) is a novel intervention which improves blood pressure control. However, little evidence exists regarding the cost-effectiveness of self-monitoring of blood pressure in general and self-management in particular. This study aimed to evaluate whether self-management of hypertension was cost-effective. DESIGN AND METHODS: A cohort Markov model-based probabilistic cost-effectiveness analysis was undertaken extrapolating to up to 35 years from cost and outcome data collected from the telemonitoring and self-management in hypertension trial (TASMINH2). Self-management of hypertension was compared with usual care in terms of lifetime costs, quality adjusted life years and cost-effectiveness using a UK Health Service perspective. Sensitivity analyses examined the effect of different time horizons and reduced effectiveness over time from self-management. RESULTS: In the long-term, when compared with usual care, self-management was more effective by 0.24 and 0.12 quality adjusted life years (QALYs) gained per patient for men and women, respectively. The resultant incremental cost-effectiveness ratio for self-management was pound1624 per QALY for men and pound4923 per QALY for women. There was at least a 99% chance of the intervention being cost-effective for both sexes at a willingness to pay threshold of pound20,000 per QALY gained. These results were robust to sensitivity analyses around the assumptions made, provided that the effects of self-management lasted at least two years for men and five years for women. CONCLUSION: Self-monitoring with self-titration of antihypertensives and telemonitoring of blood pressure measurements not only reduces blood pressure, compared with usual care, but also represents a cost-effective use of health care resources.

Kaner, E., et al. (2007). "Medical communication and technology : a video-based process study of the use of decision aids in primary care consultations." *Bmc Medical Informatics and Decision Making* **7**(2): 1-11. <http://www.biomedcentral.com/content/pdf/1472-6947-7-2.pdf>

Kardas, P., et al. (2016). "Type 2 Diabetes Patients Benefit from the COMODITY12 mHealth System: Results of a Randomised Trial." *J Med Syst* **40**(12): 259.

Patient acceptance is one of the major barriers toward widespread use of mHealth systems. The aim of this study was to assess system operability and whole trial feasibility, including patients' experience with their use of COMMODITY12 mHealth system under. Secondary study aims included assessment of several metabolic parameters as well as patient adherence to the treatment. This was a prospective parallel-arm randomized controlled trial in outpatients diagnosed with DM2, being treated in the primary care settings in Lodz region, Poland, with 6 weeks period of follow-up. Patients opinions were collected with 7-item questionnaire, assessing different aspects of system use, as well as EuroQol-5D-5 L questionnaire, assessing health-related quality of life. Sixty patients (female, 24, male, 36, mean age +/- SD 59.5 +/- 6.8) completed study. All four layers of the COMMODITY12 system proved to work smooth under real-life conditions, without major problems. All dimensions of experience with system use were assessed well, with maximum values for clearness of instructions, and ease of use (4.80, and 4.63, respectively). Health related quality of life, as assessed with cumulative utility measure, improved significantly in COMMODITY12 system users ($P < 0.05$). mHealth system modestly improved glycaemic and blood pressure control, assuring high level of patient adherence with overall adherence reaching 92.9 %. Study proved that the COMODITY12 system is well accepted by type 2 diabetes patients taking part in clinical trial, leading to several clinical benefits, and improved quality of life. Nevertheless, before future commercialisation of the system, several minor problems identified during the study need to be addressed.

Keane, M. G. (2009). "A review of the role of telemedicine in the accident and emergency department." *J Telemed Telecare* **15**(3): 132-134.

A literature search was conducted for articles on the role of telemedicine in accident and emergency work. The search yielded 39 relevant papers, which came from 21 independent groups that had used telemedicine in an emergency medicine setting. The articles showed that telemedicine has been applied in a variety of ways from medical advice for paramedics in the disaster setting, to patient follow-up in the fracture clinic. A variety of communications equipment has been tried, including radio links, telephone, email and mobile wireless videoconferencing devices. All such links have been found to transfer information effectively, but success has sometimes been limited by technical failure and by staff lacking confidence in using the systems. Telemedicine has been used widely to support emergency nurse practitioners in minor injury units. Telemedicine has also been suggested as a way for paramedics to communicate with regional coronary care units quickly, hence enabling them to provide pre-hospital thrombolysis in the field when appropriate. The accident and emergency setting is well suited to the application of telemedicine. Larger trials and cost-effectiveness studies are required in this area.

Klazinga, N. (2010). *Improving Value in Health Care: Measuring Quality*, Paris : OCDE

http://www.oecd.org/document/42/0,3343,en_2649_33929_46144874_1_1_1_1,00.html

- <http://books.google.com/books?id=AQ1QmWh4B6oC&printsec=frontcover&hl=fr#v=onepage&q&f=false>

This report is about how to improve quality in health care ? a vital objective for health systems everywhere. Quality in health care is multifaceted and has various perspectives. Every patient has a right to receive timely, safe and effective care. Patients also have a right to be informed about the care process and about its risk and benefits. Those who fund and manage health care have a duty to ensure that scarce health care resources are used judiciously and wisely for the greatest public good. The drive to improve quality does not stem simply from the fact that it is the right thing to do. Increased public involvement and awareness have been accompanied by a series of landmark critiques on quality in health care. The larger role of ICTs in health care systems has also meant that information relating to quality is now more abundant. Added to this, cost pressures on health systems have increased dramatically and OECD countries now spend more on health than ever before. Poor-quality health care ruins people's lives or kills them (Institute of Medicine). It is also wasteful and expensive and results in squandered opportunities to treat those with the greatest need and least capital. As such, quality improvement in health care matters to the economy and to society. But how is better quality in health care achieved? How do we ensure that the views and experience of those who use health services promote improvements in quality? How do we measure quality and what are the benefits of ensuring that quality improvement policies are adequately linked with other related policy imperatives? Based on the experience of the OECD Health Care Quality Indicator Project, this report provides a template for policy makers and officials who are interested in improving the quality of their health care systems. The report does not advocate a 'one-size-fits-all' approach to quality improvement; rather it points to certain key elements that make up effective quality improvement strategies ? principally, the requirement to align health care quality standards with national and local information systems developments, and to ensure that national strategies and policies aimed at improving quality are linked to robust quality indicators.

Kleiboer, A., et al. (2016). "European COMPARative Effectiveness research on blended Depression treatment versus treatment-as-usual (E-COMPARED): study protocol for a randomized controlled, non-inferiority trial in eight European countries." *Trials* **17**(1): 387.

BACKGROUND: Effective, accessible, and affordable depression treatment is of high importance considering the large personal and economic burden of depression. Internet-based treatment is considered a promising clinical and cost-effective alternative to current routine depression treatment strategies such as face-to-face psychotherapy. However, it is not clear whether research findings translate to routine clinical practice such as primary or specialized mental health care. The E-COMPARED project aims to gain knowledge on the clinical and cost-effectiveness of blended depression treatment compared to treatment-as-usual in routine care. **METHODS/DESIGN:** E-COMPARED will employ a pragmatic, multinational, randomized controlled, non-inferiority trial in eight European countries. Adults diagnosed with major depressive disorder (MDD) will be recruited in primary care (Germany, Poland, Spain, Sweden, and the United Kingdom) or specialized mental health care (France, The Netherlands, and Switzerland). Regular care for depression is compared to

"blended" service delivery combining mobile and Internet technologies with face-to-face treatment in one treatment protocol. Participants will be followed up at 3, 6, and 12 months after baseline to determine clinical improvements in symptoms of depression (primary outcome: Patient Health Questionnaire-9), remission of depression, and cost-effectiveness. Main analyses will be conducted on the pooled data from the eight countries (n = 1200 in total, 150 participants in each country). DISCUSSION: The E-COMPARED project will provide mental health care stakeholders with evidence-based information and recommendations on the clinical and cost-effectiveness of blended depression treatment. TRIAL REGISTRATION: France: ClinicalTrials.gov NCT02542891 . Registered on 4 September 2015; Germany: German Clinical Trials Register DRKS00006866 . Registered on 2 December 2014; The Netherlands: Netherlands Trials Register NTR4962 . Registered on 5 January 2015; Poland: ClinicalTrials.gov NCT02389660 . Registered on 18 February 2015; Spain: ClinicalTrials.gov NCT02361684 . Registered on 8 January 2015; Sweden: ClinicalTrials.gov NCT02449447 . Registered on 30 March 2015; Switzerland: ClinicalTrials.gov NCT02410616 . Registered on 2 April 2015; United Kingdom: ISRCTN registry, ISRCTN12388725 . Registered on 20 March 2015.

Kolominsky-Rabas, P. L., et al. (2016). "Health Economic Impact of a Pulmonary Artery Pressure Sensor for Heart Failure Telemonitoring: A Dynamic Simulation." Telemed J E Health **22**(10): 798-808.

AIMS: Recently, a permanently implantable wireless system, designed to monitor and manage pulmonary artery (PA) pressures remotely, demonstrated significant reductions in heart failure (HF) hospitalizations in high-risk symptomatic patients, regardless of ejection fraction. The objectives of this study were to simulate the estimated clinical and economic impact in Germany of generalized use of this PA pressure monitoring system considering reductions of HF hospitalizations and the improvement in Quality of Life. MATERIALS AND METHODS: Based on the Prospective Health Technology Assessment approach, we simulated the potential of the widespread application of PA pressure monitoring on the German healthcare system for the period 2009-2021. RESULTS: This healthcare economic simulation formulated input assumptions based on results from the CHAMPION Trial, a multicenter, prospective, randomized controlled U.S. trial that demonstrated a 37% reduction of hospitalizations in persistently symptomatic previous HF patients. Based on these results, an estimated 114,800 hospitalizations would be expected to be avoided. This effect would potentially save an estimated euro522 million, an equivalent of \$575 million, during the entire simulation period. CONCLUSION: This healthcare economic modeling of the PA pressure monitoring system's impact demonstrates substantial clinical and economic benefits in the German healthcare system.

Kooy, M. J., et al. (2015). "Patients' general satisfaction with telephone counseling by pharmacists and effects on satisfaction with information and beliefs about medicines: Results from a cluster randomized trial." Patient Educ Couns **98**(6): 797-804.

OBJECTIVE: Assess effects of pharmacists' counseling by telephone on patients' satisfaction with counseling, satisfaction with information and beliefs about medicines for newly prescribed medicines. METHODS: A cluster randomized trial in Dutch community pharmacies. Patients ≥ 18 years were included when starting with antidepressants, bisphosphonates, RAS-inhibitors or statins. The intervention comprised counseling by telephone to address barriers to adherent behavior. It was supported by an interview protocol. Controls received usual care. Outcomes were effects on beliefs about medication, satisfaction with information and counseling. Data was collected with a questionnaire. RESULTS: Responses of 211 patients in nine pharmacies were analyzed. More intervention arm patients were satisfied with counseling (adj. OR 2.2 (95% CI 1.3, 3.6)). Patients with counseling were significantly more satisfied with information on 4 items, had less concerns and less frequently had a 'skeptical' attitude towards medication (adj. OR 0.5 (0.3-0.9)). Effects on most outcomes were more pronounced in men than in women. CONCLUSIONS: Telephone counseling by pharmacists improved satisfaction with counseling and satisfaction with information on some items. It had a small effect on beliefs about medicines. PRACTICE IMPLICATIONS: Pharmacists can use counseling by telephone, but more research is needed to find out which patients benefit most.

Kovacs, G., et al. (2017). "Bedside ROP screening and telemedicine interpretation integrated to a neonatal transport system: Economic aspects and return on investment analysis." Early Hum Dev **106-107**: 1-5.

BACKGROUND AND AIM: Peter Cerny Ambulance Service - Premature Eye Rescue Program (PCA-PERP) uses digital retinal imaging (DRI) with remote interpretation in bedside ROP screening, which has advantages over binocular indirect ophthalmoscopy (BIO) in screening of premature newborns. We aimed to demonstrate that PCA-PERP provides good value for the money and to model the cost ramifications of a similar newly launched system. **METHODS:** As DRI was demonstrated to have high diagnostic performance, only the costs of bedside DRI-based screening were compared to those of traditional transport and BIO-based screening (cost-minimization analysis). The total costs of investment and maintenance were analyzed with micro-costing method. A ten-year analysis time-horizon and service provider's perspective were applied. **RESULTS:** From the launch of PCA-PERP up to the end of 2014, 3722 bedside examinations were performed in the PCA covered central region of Hungary. From 2009 to 2014, PCA-PERP saved 92,248km and 3633 staff working hours, with an annual nominal cost-savings ranging from 17,435 to 35,140 Euro. The net present value was 127,847 Euro at the end of 2014, with a payback period of 4.1years and an internal rate of return of 20.8%. Our model presented the NPVs of different scenarios with different initial investments, annual number of transports and average transport distances. **CONCLUSIONS:** PCA-PERP as bedside screening with remote interpretation, when compared to a transport-based screening with BIO, produced better cost-savings from the perspective of the service provider and provided a return on initial investment within five years after the project initiation.

Krauss, M., et al. (2015). "[Big Data- challenges and risks]." Orv Hetil **156**(49): 1979-1986.

The term "Big Data" is commonly used to describe the growing mass of information being created recently. New conclusions can be drawn and new services can be developed by the connection, processing and analysis of these information. This affects all aspects of life, including health and medicine. The authors review the application areas of Big Data, and present examples from health and other areas. However, there are several preconditions of the effective use of the opportunities: proper infrastructure, well defined regulatory environment with particular emphasis on data protection and privacy. These issues and the current actions for solution are also presented.

Krishna, M. T., et al. (2016). "Is there a role for telemedicine in adult allergy services?" Clin Exp Allergy **46**(5): 668-677.

Telemedicine refers to the application of telecommunication and information technology (IT) in the delivery of health and clinical care at a distance or remotely and can be broadly considered in two modalities: store-and-forward and real-time interactive services. Preliminary studies have shown promising results in radiology, dermatology, intensive care, diabetes, rheumatology and primary care. However, the evidence is limited and hampered by small sample sizes, paucity of randomized control studies and lack of data relating to cost-effectiveness, health-related quality of life and patient and clinician satisfaction. This review appraises the evidence from studies that have employed telemedicine tools in other disciplines and makes suggestions for its potential applications in specific clinical scenarios in adult allergy services. Possible examples include: triaging patients to determine the need for allergy tests; pre-assessment for specialized treatments such as allergen immunotherapy, follow-up to assess treatment response and side effects; and education in self-management plan including training updates for self-injectable adrenaline and nasal spray use. This approach might improve access for those with limited mobility or living far away from regional centres, as well as bringing convenience and cost savings for the patient and service provider. These potential benefits need to be carefully weighed against evidence of service safety and quality. Keys to success include delineation of appropriate clinical scenarios, patient selection, training, IT support and robust information governance framework. Well-designed prospective studies are needed to evaluate its role.

Lamminen, H., et al. (2000). "A feasibility study of realtime teledermatology in Finland." Journal of Telemedicine and Telecare **6**(2): 102-107, 107 tabl.

Lang, A. (2014). "Government capacities and stakeholders: what facilitates ehealth legislation?" Global Health **10**: 4.

BACKGROUND: Newly established high-technology areas such as eHealth require regulations regarding the interoperability of health information infrastructures and data protection. It is argued that government capacities as well as the extent to which public and private organizations participate in policy-making determine the level of eHealth legislation. Both explanatory factors are influenced by international organizations that provide knowledge transfer and encourage private actor participation. **METHODS:** Data analysis is based on the Global Observatory for eHealth-ATLAS eHealth country profiles which summarizes eHealth policies in 114 countries. Data analysis was carried out using two-component hurdle models with a truncated Poisson model for positive counts and a hurdle component model with a binomial distribution for zero or greater counts. **RESULTS:** The analysis reveals that the participation of private organizations such as donors has negative effects on the level of eHealth legislation. The impact of public-private partnerships (PPPs) depends on the degree of government capacities already available and on democratic regimes. Democracies are more responsive to these new regulatory demands than autocracies. Democracies find it easier to transfer knowledge out of PPPs than autocracies. Government capacities increase the knowledge transfer effect of PPPs, thus leading to more eHealth legislation. **CONCLUSIONS:** All international regimes--the WHO, the EU, and the OECD--promote PPPs in order to ensure the construction of a national eHealth infrastructure. This paper shows that the development of government capacities in the eHealth domain has to be given a higher priority than the establishment of PPPs, since the existence of some (initial) capacities is the sine qua non of further capacity building.

Leenen, L. A., et al. (2014). "(Cost)-effectiveness of a multi-component intervention for adults with epilepsy: study protocol of a Dutch randomized controlled trial (ZMILE study)." *BMC Neurol* **14**: 255.

BACKGROUND: In patients with epilepsy, poor adherence to anti-epileptic drugs has been shown to be the most important cause of poorly controlled epilepsy. Furthermore, it has been noted that the quality of life among patients with epilepsy can be improved by counseling and treatments aimed at increasing their self-efficacy and concordance, thus stimulating self-management skills. However, there is a need for evidence on the effectiveness of such programs, especially within epilepsy care. Therefore, we have developed a multi-component intervention (MCI) which combines a self-management/education program with e-Health interventions. Accordingly, the overall objective of this study is to assess the (cost)-effectiveness and feasibility of the MCI, aiming to improve self-efficacy and concordance in patients with epilepsy. **METHODS:** A RCT in two parallel groups will be conducted to compare the MCI with a control condition in epilepsy patients. One hundred eligible epilepsy patients will be recruited and allocated to either the intervention or control group. The intervention group will receive the MCI consisting of a self-management/education program of six meetings, including e-Health interventions, and will be followed for 12 months. The control group will receive care as usual and will be followed for 6 months, after which patients will be offered the possibility of participating in the MCI. The study will consist of three parts: 1) a clinical effectiveness study, 2) a cost-effectiveness study, and 3) process evaluation. The primary outcome will be self-efficacy. Secondary outcomes include adherence, side effects, change in seizure severity & frequency, improved quality of life, proactive coping, and societal costs. Outcome assessments will be done using questionnaires at baseline and after 3, 6, 9, and 12 months (last two applicable only for intervention group). **DISCUSSION:** In times of budget constraints, MCI could be a valuable addition to the current healthcare provision for epilepsy, as it is expected that higher concordance and self-efficacy will result in reduced use of healthcare resources and an increased QOL. Accordingly, this study is aimed helping patients to be their own provider of health care, shifting epilepsy management from professionals to self-care by patients equipped with appropriate skills and tools. **TRIAL REGISTRATION NUMBER:** NTR4484 .

Leroi, I., et al. (2013). "Does telecare prolong community living in dementia? A study protocol for a pragmatic, randomised controlled trial." *Trials* **14**: 349.

BACKGROUND: Assistive technology and telecare (ATT) are relatively new ways of delivering care and support to people with social care needs. It is claimed that ATT reduces the need for community care, prevents unnecessary hospital admission, and delays or prevents admission into residential or nursing care. The current economic situation in England has renewed interest in ATT instead of community care packages. However, at present, the evidence base to support claims about the impact and

effectiveness of ATT is limited, despite its potential to mitigate the high financial cost of caring for people with dementia and the social and psychological cost to unpaid carers. **METHOD/DESIGN:** ATTILA (Assistive Technology and Telecare to maintain Independent Living At Home for People with Dementia) is a pragmatic, multi-centre, randomised controlled trial over 104 weeks that compares outcomes for people with dementia who receive ATT and those who receive equivalent community services but not ATT. The study hypothesis is that fewer people in the ATT group will go into institutional care over the 4-year period for which the study is funded. The study aims to recruit 500 participants, living in community settings, with dementia or significant cognitive impairment, who have recently been referred to social services. Primary outcome measures are time in days from randomisation to institutionalisation and cost effectiveness. Secondary outcomes are caregiver burden, health-related quality of life in carers, number and severity of serious adverse events, and data on acceptability, applicability and reliability of ATT intervention packages. Assessments will be undertaken in weeks 0 (baseline), 12, 24, 52 and 104 or until institutionalisation or withdrawal of the participant from the trial. **DISCUSSION:** In a time of financial austerity, CASSRs in England are increasingly turning to ATT in the belief that it will deliver good outcomes for less money. There is an absence of robust evidence for the cost-effectiveness and benefit of using assistive technology and telecare. The ATTILA trial meets a pressing need for robust, generalisable evidence to either justify continuing investment or reappraise the appropriate scale of ATT use. **TRIAL REGISTRATION:** Current Controlled Trials ISRCTN86537017.

Levin, K., et al. (2013). "Telemedicine diabetes consultations are cost-effective, and effects on essential diabetes treatment parameters are similar to conventional treatment: 7-year results from the Svendborg Telemedicine Diabetes Project." *J Diabetes Sci Technol* **7**(3): 587-595.

BACKGROUND: The increasing number of patients with diabetes poses a major challenge for the health care system. One instrument to meet these challenges could be the use of telemedicine, which, at the same time, may reduce treatment costs. Since 2005, diabetes patients on the island of Aroe have been offered expert diabetes care using teleconsultations. This article describes the impact of the telemedicine solution on essential diabetes treatment parameters, patient satisfaction, and cost-effectiveness. **METHODS:** Telemedicine consultations were conducted with the patient and nurse specialist placed in a consultation room of Aroe Hospital in audiovisual contact with the physician situated at the hospital on the mainland. Consultations were supported by an electronic patient record and a Web-based quality-monitoring diabetes database. **RESULTS:** Inclusion criteria in this retrospective study were at least 6 months of telemedicine diabetes control with a minimum of two visits and two hemoglobin A1c (HbA1c) values. Results were compared with data from the Danish National Diabetes Registry (DVDD). Data are given in medians. In total, 23 type 1 diabetes mellitus (T1DM) patients, aged 65 (56-74) versus 48 years, diabetes duration 21.0 (10.7-31.3) versus 20.5 years, and 55 type 2 diabetes mellitus (T2DM) patients, aged 67 (64-70) versus 65 years, diabetes duration 14.0 (10.5-17.5) versus 11.7 years, were included. After teleconsultation, HbA1c in T1DM patients was 8.0% (7.4-8.6%) versus 7.9% [64 (57-71) versus 63 mmol/mol], not significant, and in T2DM patients was 7.4% (7.1-7.7%) versus 7.6% [57 (54-61) versus 60 mmol/mol], $p < .05$. Body mass index, blood pressure, and lipid values were comparable with the DVDD. Patient satisfaction was especially related to the major reduction in transportation time (7 h). Reductions in traveling costs and saved working days were the most important factors in making the telemedicine set-up economically efficient. **CONCLUSION:** Telemedicine consultation for remote outpatient diabetes control is feasible, and the interdisciplinary interventions achieved high treatment quality results in essential diabetes treatment parameters. In addition, the telemedicine set-up was associated with improved cost-effectiveness and patient satisfaction.

Lintvedt, O. K., et al. (2013). "Evaluating the translation process of an Internet-based self-help intervention for prevention of depression: a cost-effectiveness analysis." *J Med Internet Res* **15**(1): e18.

BACKGROUND: Depression is common and treatable with cognitive behavior therapy (CBT), for example. However, access to this therapy is limited. Internet-based interventions have been found to be effective in reducing symptoms of depression. The International Society for Research on Internet Interventions has highlighted the importance of translating effective Internet programs into multiple languages to enable worldwide dissemination. **OBJECTIVE:** The aim of the current study was to

determine if it would be cost effective to translate an existing English-language Internet-based intervention for use in a non-English-speaking country. METHODS: This paper reports an evaluation of a trial in which a research group in Norway translated two English-language Internet-based interventions into Norwegian (MoodGYM and BluePages) that had previously been shown to reduce symptoms of depression. The translation process and estimates of the cost-effectiveness of such a translation process is described. Estimated health effect was found by using quality-adjusted life years (QALY). RESULTS: Conservative estimates indicate that for every 1000 persons treated, 16 QALYs are gained. The investment is returned 9 times and the cost-effectiveness ratio (CER) is 3432. The costs of the translation project totaled to approximately 27% of the estimated original English-language version development costs. CONCLUSIONS: The economic analysis shows that the cost-effectiveness of the translation project was substantial. Hopefully, these results will encourage others to do similar analyses and report cost-effectiveness data in their research reports.

Lissauer, R. é. et Kendall, L. é. (2002). New Practitioners in the future health service : exploring roles for practitioners in primary and intermediate care, Londres : IPPR

This pamphlet forms part of IPPR's future health worker project, exploring the implications for the workforce of providing patient-centred care. It draws together a set of forward-looking visions of new types of practitioners and new roles that may be required in the future health service. Individually, the papers will be of interest to professionals and managers within primary care, intermediate care and public health and those involved in the development of patients' role in self-care. The roles addressed are : the lay parson as healthcare practitioner, the telecarer, the consultant pharmacist and the pharmacy technician, the public health leader, the intermediate care practitioner and knowledge brokers.

Lopez-Villegas, A., et al. (2016). "Workload, time and costs of the informal cares in patients with tele-monitoring of pacemakers: the PONIENTE study." Clin Res Cardio **105**(4): 307-313.

OBJECTIVES: The purpose of this study was to assess the burden borne by and the costs to informal caregivers of patients with remotely monitored (RM) pacemakers. METHODS: The PONIENTE study was a controlled, non-randomised clinical trial, with data collected from informal caregivers, 12 months after implantation of pacemakers. The survey on disabilities, personal autonomy, and dependency situations was used to gather information on demographic and social characteristics, levels of professionalism, time and types of care, difficulties in providing care, health status, professional aspects, economic and family or leisure impacts due to informal caregiving for patients with pacemakers. RESULTS: During 14 months, 76 caregivers were enrolled in the PONIENTE trial. Of which, 26 were included in the RM group and 50 in the hospital-monitored group (HM). The mean ages were 58.62 +/- 16.51 and 61.10 +/- 12.67 years, respectively ($p = 0.56$) in the groups, and 69.7 % were females. The majority (96.1 %) of the caregivers declared that they had to provide their services between 6 and 7 days per week (88.5 % in RM group versus 100 % in HM group; $p = 0.037$). The costs related to care provided by the informal caregivers were 21.38 % lower in the RM group than in the HM group ($p = 0.033$). CONCLUSIONS: The PONIENTE study shows a significant impact of informal care on relatives and friends of patients with pacemakers in terms of their well-being and costs. TRIAL REGISTRATION: ClinicalTrials.gov NCT02234245.

Maass, M., et al. (2000). "Transportation savings and medical benefits of a teleneuroradiological network." Journal of Telemedicine and Telecare **6**(3): 142-146, 141 tabl., 141 fig.

MacFarlane, A., et al. (2006). "Telemedicine services in the Republic of Ireland: an evolving policy context." Health Policy **76**(3): 245-258.

The Republic of Ireland is characterised by few urban conurbations and a high rural population, including significant numbers of island dwellers. Information communication technologies (ICT), including telemedicine, present opportunities to address rural health-service delivery issues. As in other countries, the recent National Health Information Strategy is regarded as pivotal to the modernisation of the Irish health care system. There is, however, a dearth of research about telemedicine in Ireland. This paper reports, to the best of our knowledge, the first systematic review

of telemedicine in the two regional health boards in the Republic of Ireland. Details of 11 telemedicine services, all initiated by local policy, will be presented. Results of an interview study with service providers about their experiences of the practices and processes involved in telemedicine service delivery are also provided. The focus of our analysis is two-fold. We assess the resonance of these Irish data with the international literature with particular reference to a recently developed model for the normalisation of telemedicine. For the first time, this model which was developed in the United Kingdom is applied to a fresh set of empirical data in a different health care context. We then discuss a number of health information policy issues for Ireland and elsewhere arising from our analysis.

Mailuhu, A. K., et al. (2015). "The trAPP-study: cost-effectiveness of an unsupervised e-health supported neuromuscular training program for the treatment of acute ankle sprains in general practice: design of a randomized controlled trial." *BMC Musculoskelet Disord* **16**: 78.

BACKGROUND: Ankle sprains are one of the most frequent injuries of the musculoskeletal system, with yearly around 680.000 new sprains in The Netherlands. Of these, about 130.000 people will visit the general practitioner (GP) each year. In addition, patients have an increased risk of a recurrent ankle sprain and about a third report at least one re-sprain. No optimal treatment strategy has proven to be effective in general practice, however promising results were achieved in a preventive trial among athletes. Therefore, the objective is to examine the (cost)-effectiveness of an unsupervised e-health supported neuromuscular training program in combination with usual care in general practice compared to usual care alone in patients with acute ankle sprains in general practice.

METHOD/DESIGN: This study is a multi-center, open-label randomized controlled trial, with a one-year follow-up. Patients with an acute lateral ankle sprain, aged between 14 and 65 years and visiting the GP within three weeks of injury are eligible for inclusion. Patients will be randomized in two study groups. The intervention group will receive, in addition to usual care, a standardized eight-week neuromuscular training program guided by an App. The control group will receive usual care in general practice alone. The primary outcome of this study is the total number of ankle sprain recurrences reported during one year follow-up. Secondary outcomes are subjective recovery after one year follow-up, pain at rest and during activity, function, return to sport, cost-effectiveness and compliance of the intervention. Measurements will take place monthly for the study period of 12 months after baseline measurement. **DISCUSSION:** For general practitioners the treatment of acute ankle sprains is a challenge. A neuromuscular training program that has proven to be effective for athletes might be a direct treatment tool for acute ankle sprains in general practice. Positive results of this randomized controlled trial can lead to changes in practice guidelines for general practitioners. In addition, since this training program is e-health supported, positive results can also lead to a novel way of injury prevention. **TRIAL REGISTRATION:** Dutch Trial Registration: NTR4765.

Mair, F. et Whitten, P. (2000). "Systematic review of studies of patient satisfaction with telemedicine." *British Medical Journal* **320**: 1517-1520, 1511 tabl.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC27397/pdf/1517.pdf>

Mairesse, G. H., et al. (2015). "Implementation and reimbursement of remote monitoring for cardiac implantable electronic devices in Europe: a survey from the health economics committee of the European Heart Rhythm Association." *Europace* **17**(5): 814-818.

Remote monitoring (RM) of cardiac implantable electronic devices (CIEDs) permits early detection of arrhythmias, device, and lead failure and may also be useful in risk-predicting patient-related outcomes. Financial benefits for patients and healthcare organizations have also been shown. We sought to assess the implementation and funding of RM of CIEDs, including conventional pacemakers (PMs), implantable cardioverter defibrillators (ICDs), and cardiac resynchronization therapy (CRT) devices in Europe. Electronic survey from 43 centres in 15 European countries. In the study sample, RM was available in 22% of PM patients, 74% of ICD patients, and 69% of CRT patients. The most significant perceived benefits were the early detection of atrial arrhythmias in pacemaker patients, lead failure in ICD patients, and worsening heart failure in CRT patients. Remote monitoring was reported to lead a reduction of in-office follow-ups for all devices. The most important reported barrier to the implementation of RM for all CIEDs was lack of reimbursement (80% of centres).

Physicians regard RM of CIEDs as a clinically useful technology that affords significant benefits for

patients and healthcare organizations. Remote monitoring, however, is perceived as increasing workload. Reimbursement for RM is generally perceived as a major barrier to implementation.

Martin-Vaquero, P., et al. (2014). "Position statement on efficiency of technologies for diabetes management." Endocrinol Nutr **61**(10): e45-63.

Di@bet.es study results are impressive, showing that diabetes affects 13.8% of the Spanish population. Not only the statistical facts are alarming, but the increasing incidence of this disease is a major problem, as pandemic proportions of type 2 diabetes are expected. Thus, the study of diabetes represents a challenge not only for health services, but also for the Ministries of Health and Finance. Technology has become an essential tool in the quality care of patients with diabetes, as it helps in the healthcare processes to obtain an optimum metabolic balance and prevent possible complications. Insulin pumps, continuous glucose monitoring and self-monitoring blood glucose have all proved their efficiency, and telemedicine it is making good progress. The indirect costs of diabetes in Spain are much higher than the direct ones, showing the importance of inverting the paradox. The optimization of resources depends not only on the ability of the physicians, but also the administration, to implant and sustain technological innovations in our system, and with that make it effective in terms of benefits. Cost-effectiveness and cost-utility analysis are needed to prioritize and allow health management services to make the correct choices for approaching this prevalent chronic disease.

Marx, G., et al. (2015). "[Tele-cooperation for innovative care using the example of the University Hospital Aachen. Telematics in intensive care medicine, emergency medicine, and telemedical intersectoral rehabilitation planning in geriatric trauma]." Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz **58**(10): 1056-1061.

The demographic challenge of the ageing society is associated with increasing comorbidity. On the other hand, there will be an ageing workforce in medicine, resulting in an imbalance between the demand and supply of medical care in the near future. In rural areas in particular, this imbalance is already present today. Based on three best practice projects carried out by our telemedical center in Aachen, including emergency medicine, intensive care medicine, and the rehabilitation planning of geriatric trauma care, some experience and the potential of the intersectoral provision of care, supported by telemedicine, are demonstrated. Telemedicine is the provision of medical services over a geographical distance by using tele-communication and data transfer. It has been proven to ensure a constant quality of health care. Telemedical support enables shared expertise independent of time and space, and allows efficient allocation of resources. A review of international experience supports this notion.

May, R. C., et al. (2011). "Integrating telecare for chronic disease management in the community: What needs to be done?" Bmc Health Services Research **11**(131): 11, fig.
<http://www.biomedcentral.com/content/pdf/1472-6963-11-131.pdf>

The study reported in this paper had two objectives. First, it sought to identify, describe and understand the factors that promote or inhibit the implementation and integration of telecare systems for chronic disease management in the community, with reference to the views of four key stakeholder groups: patients and carers; healthcare managers and professionals; social care managers and professionals; and telecare systems manufacturers and suppliers. Second, it sought to identify a set of principles, grounded in the experiences and perspectives of participants, which could be used to inform policy and practice around telecare implementation in the context of a 'whole systems' approach that is, across boundaries of the private, public and domestic sectors, all of which are playing an increasingly important role in the management of chronic disease. The study reported here may be the largest and most comprehensive qualitative study in this sphere to date.

McLean, S., et al. (2012). "Telehealthcare for chronic obstructive pulmonary disease: Cochrane Review and meta-analysis." Br J Gen Pract **62**(604): e739-749.

BACKGROUND: Chronic obstructive pulmonary disease (COPD) is common. Telehealthcare, involving personalised health care over a distance, is seen as having the potential to improve care for people

with COPD. AIM: To systematically review the effectiveness of telehealthcare interventions in COPD to improve clinical and process outcomes. DESIGN AND SETTING: Cochrane Systematic Review of randomised controlled trials. METHODS: The study involved searching the Cochrane Airways Group Register of Trials, which is derived from the Cochrane Central Register of Controlled Trials, MEDLINE, embase, and CINAHL, as well as searching registers of ongoing and unpublished trials. Randomised controlled trials comparing a telehealthcare intervention with a control intervention in people with a clinical diagnosis of COPD were identified. The main outcomes of interest were quality of life and risk of emergency department visit, hospitalisation, and death. Two authors independently selected trials for inclusion and extracted data. Study quality was assessed using the Cochrane Collaboration's risk of bias method. Meta-analysis was undertaken using fixed effect and/or random effects modelling. RESULTS: Ten randomised controlled trials were included. Telehealthcare did not improve COPD quality of life: mean difference -6.57 (95% confidence interval [CI] = -13.62 to 0.48). However, there was a significant reduction in the odds ratios (ORs) of emergency department attendance (OR = 0.27; 95% CI = 0.11 to 0.66) and hospitalisation (OR = 0.46; 95% CI = 0.33 to 0.65). There was a non-significant change in the OR of death (OR = 1.05; 95% CI = 0.63 to 1.75). CONCLUSION: In COPD, telehealthcare interventions can significantly reduce the risk of emergency department attendance and hospitalisation, but has little effect on the risk of death.

McLeod, F., et al. (2014). "Improving collection efficiency through remote monitoring of charity assets." *Waste Manag* **34**(2): 273-280.

Collection costs associated with servicing a major UK charity's donation banks and collecting unsold goods from their retail shops can account for up to 20% of the overall income gained. Bank and shop collections are commingled and are typically made on fixed days of the week irrespective of the amounts of materials waiting to be collected. Using collection records from a major UK charity, this paper considers what vehicle routing and scheduling benefits could accrue if bank and shop servicing requirements were monitored, the former using remote sensing technology to allow more proactive collection scheduling. A vehicle routing and scheduling algorithm employing tabu search methods was developed, and suggested time and distance savings of up to 30% over the current fixed schedules when a minimum bank and shop fill level of between 50% and 60% was used as a collection trigger. For the case study investigated, this led to a potential revenue gain of 5% for the charity and estimated CO2 savings of around 0.5 tonnes per week across the fleet of six heterogeneous vehicles.

Mistry, H. (2014). "Exploring two cost-adjustment methods for selection bias in a small sample: using a fetal cardiology dataset." *Int J Technol Assess Health Care* **30**(3): 325-332.

OBJECTIVES: In economic evaluations of healthcare technologies, situations arise where data are not randomized and numbers are small. For this reason, obtaining reliable cost estimates of such interventions may be difficult. This study explores two approaches in obtaining cost estimates for pregnant women screened for a fetal cardiac anomaly. METHODS: Two methods to reduce selection bias in health care: regression analyses and propensity scoring methods were applied to the total mean costs of pregnancy for women who received specialist cardiac advice by means of two referral modes: telemedicine and direct referral. RESULTS: The observed total mean costs of pregnancy were higher for the telemedicine group than the direct referral group (4,918 versus 4,311 GBP). The regression model found that referral mode was not a significant predictor of costs and the cost difference between the two groups was reduced from 607 to 94 GBP. After applying the various propensity score methods, the groups were balanced in terms of sizes and compositions; and again the cost differences between the two groups were smaller ranging from -62 (matching "by hand") to 333 GBP (kernel matching). CONCLUSIONS: Regression analyses and propensity scoring methods applied to the dataset may have increased the homogeneity and reduced the variance in the adjusted costs; that is, these methods have allowed the observed selection bias to be reduced. I believe that propensity scoring methods worked better for this dataset, because after matching the two groups were similar in terms of background characteristics and the adjusted cost differences were smaller.

Mistry, H. et Gardiner, H. M. (2013). "The cost-effectiveness of prenatal detection for congenital heart disease using telemedicine screening." *J Telemed Telecare* **19**(4): 190-196.

We estimated the longer-term cost-effectiveness of using telemedicine screening for prenatal detection of congenital heart disease (CHD). One hospital in south-east England with a telemedicine service was connected to a fetal cardiology unit in London. A UK health service perspective was adopted. Evidence on costs and outcomes for standard-risk pregnant women during the antenatal period was based on patient-level data. Extrapolation beyond the end of the study (just after delivery) was carried out for the lifetime of children born with and without CHD. Expert opinion and data from published sources was used to populate a decision model. Future costs and benefits were discounted. The main outcome was quality-adjusted life years (QALYs) and results were expressed as cost per QALY gained. Various one-way sensitivity analyses were conducted. The model showed that offering telemedicine screening by specialists to all standard-risk pregnant women was the dominant strategy (i.e. cheaper and more effective). The sensitivity analyses found that the model was robust, and that telemedicine remained the most cost-effective strategy. The study showed that it would be cost-effective to provide telemedicine examinations as part of an antenatal screening programme for all standard-risk women.

Mistry, H., et al. (2014). "Critical appraisal of published systematic reviews assessing the cost-effectiveness of telemedicine studies." *Telemed J E Health* **20**(7): 609-618.

BACKGROUND: Over the last 10 years several systematic reviews have been published on the cost-effectiveness of telemedicine studies. Most reviews have concluded that there is not much difference in the cost-effectiveness when delivering health services via telemedicine or by conventional means. We are not aware of any systematic review looking at the systematic reviews of cost-effectiveness of telemedicine. This study was designed to identify published systematic reviews on the cost-effectiveness of telemedicine studies and to undertake a quality assessment of the identified systematic reviews. **MATERIALS AND METHODS:** We searched six electronic databases, including Medline, Embase, and the NHS Economic Evaluation Database, combining "review" terms with "telemedicine" terms to identify systematic reviews. **RESULTS:** We identified 4,116 potential abstracts. Nine systematic reviews met the inclusion criteria, which looked at the cost-effectiveness of telemedicine in general. All reviews were similar in terms of their stated purpose, and the objectives were clear. Three of the reviews did not use a checklist for the economic evaluation studies included in their review. The quality assessment found that five of the nine reviews had minimal flaws. **CONCLUSIONS:** Even though the general quality of reporting of the reviews was fine, we have found that conclusions cannot be drawn on the cost-effectiveness of telemedicine applications based on the methodological flaws in the economic analysis of the studies included in the reviews. Over time, reporting of cost-effectiveness has generally improved; however, there is still room for improvement, and authors need to use the recommended checklists for economic evaluations.

Momanyi, K. (2017). *Telecare and Unplanned Hospitalisation in Scotland: Evidence from Linked Survey and Administrative Data*. Aberdeen University of Aberdeen: Pas encore accessible en ligne.

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3061435

In the face of increasing health care costs, policy makers in Scotland are interested in coming up with innovative ways of reducing unplanned hospital admissions. This paper investigates whether the use of telecare devices could be one such way. We link the Scottish Homecare Census data to three other information sources—including the Scottish Morbidity Records—and estimate the treatment effect using time series analysis. Unlike the previous studies that find telecare users to have a lower likelihood of unplanned hospitalisation than non-users, our results show that the treatment effect varies for different telecare devices.

Monanyi, K. (2017). *An Econometric Analysis of the Impact of Telecare*. Aberdeen University of Aberdeen: 20, tab., graph., fig.

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3017182

This paper presents some preliminary results of a study investigating the effect of telecare on the length of stay in hospital using linked administrative health and social care data in Scotland. We make various assumptions about the probability distribution of the outcome measure and formulate three Negative Binomial Models to that effect i.e. a basic Negative Binomial Model, a zero-inflated Negative

Binomial Model and a zero-truncated Negative Binomial Model. We then bring the models to data and estimate them using a strategy that controls for the effects of confounding variables and unobservable factors. These models provide an alternative to the Propensity Score Matching technique used by the previous studies. The empirical results show that telecare users are expected to spend a shorter time in hospital than non-users, holding other factors constant. The results also show that older individuals, females, rural residents and individuals with comorbidities have a longer length of stay in hospital, on average, than their counterparts, all things equal. Future research will involve conducting a sub-group analysis, investigating the effectiveness of various telecare devices and determining the impact of telecare on admission to hospital.

Moore, A. (2014). "Telehealth. Remote control of care. Monitoring patients with chronic conditions in." *Health Serv J* **124**(6401): 24-25.

Mort, M., et al. (2013). "Ageing with telecare: care or coercion in austerity?" *Social Health Illn* **35**(6): 799-812.

In recent years images of independence, active ageing and staying at home have come to characterise a successful old age in western societies. 'Telecare' technologies are heavily promoted to assist ageing-in-place and a nexus of demographic ageing, shrinking healthcare and social care budgets and technological ambition has come to promote the 'telehome' as the solution to the problem of the 'age dependency ratio'. Through the adoption of a range of monitoring and telecare devices, it seems that the normative vision of independence will also be achieved. But with falling incomes and pressure for economies of scale, what kind of independence is experienced in the telehome? In this article we engage with the concepts of 'technogenarians' and 'shared work' to illuminate our analysis of telecare in use. Drawing on European-funded research we argue that home-monitoring based telecare has the potential to coerce older people unless we are able to recognise and respect a range of responses including non-use and 'misuse' in daily practice. We propose that re-imagining the aims of telecare and redesigning systems to allow for creative engagement with technologies and the co-production of care relations would help to avoid the application of coercive forms of care technology in times of austerity.

Muller, R. P. et Eich, H. T. (2005). "The development of quality assurance programs for radiotherapy within the German Hodgkin Study Group (GHSg). Introduction, continuing work, and results of the radiotherapy reference panel." *Strahlenther Onkol* **181**(9): 557-566.

BACKGROUND AND PURPOSE: The German Hodgkin Study Group (GHSg), including more than 500 participating centers, established a central radiotherapy (RT) reference center to improve quality of treatment, starting with the first study generation in 1978. More than 11,000 patients with Hodgkin's lymphoma (HL) have been enrolled into these trials. Extensive continuing quality assurance programs (QAPs) during the study generations have been performed. The purpose of the present article is to summarize the experiences and results of the performed and ongoing QAPs. **MATERIAL AND METHODS:** A panel of expert radiation oncologists (second study generation HD4-6, 1988-1994, and third study generation HD7-9, 1993-1998) retrospectively evaluated the adequacy of treatment fields, applied radiation doses, treatment time, and technical parameters. Furthermore, a detailed analysis of relapses in correlation with the performed RT was conducted. For the fourth study generation (HD10-12, 1998-2002), the RT reference center changed from Munich to Cologne. New RT QAPs were initiated according to the demands of the new trials and former programs were enhanced: (1) central prospective radiation oncologic review of cross-sectional imaging (HD10, HD11) to create the individual radiation treatment plan; (2) retrospective analysis of the adequacy of the performed involved-field (IF) RT (HD10, HD11); (3) the multidisciplinary HD12 panel (radiation oncologists, medical oncologists, diagnostic radiologists); (4) initiation and integration of a teleradiotherapy network into the GHSg trials. **RESULTS:** A strong achievement of these activities in the era of extended-field RT was to show that major deviations of radiation treatment portals and radiation dose from prospective treatment prescriptions revealed to be unfavorable prognostic factors for patients with early-stage HL (HD4). The central prospective radiation oncological review of all diagnostic imaging (HD10, HD11) showed that corrections of disease involvement in 49% of patients (593/1,214) with early stages (HD10) and in 67% of patients (936/1,397) with intermediate stages (HD11) were necessary. These procedures had a significant impact on the correctness of stage definition, allocation

to treatment groups and on the extension of the IF treatment volume. Until now, 1,080 patients in HD10 and HD11 have been evaluated retrospectively with regard to the adequacy of the performed IF-RT. Although the participating institutions got a precise RT prescription, interim results reveal deviations in a significant number of cases. In the HD12 trial (advanced stages), a multidisciplinary panel of radiation oncologists, radiologists and medical oncologists reviewed all the diagnostic imaging from diagnosis throughout the treatment in comparison to the documentation forms. For patients with poor response to chemotherapy, the panel recommended RT independent of the randomization. This procedure ensured that patients with a poor response to chemotherapy received additional RT. 1,080 of 1,594 randomized patients (68%) could be analyzed. After chemotherapy, 599 patients (56%) showed residual disease (> 1.5 cm), and in 145/1,080 patients (13.5%) the panel recommended additional RT independent of the randomization arm. The introduction of electronic image transfer optimized and simplified the workflow of the QAPs. Rapid online consultation and real-time teleconferences regarding disease involvement, patient management and communication of the RT prescription with connected hospitals proved to be extremely helpful. CONCLUSION: Today, radiation oncologists in the GHSg perform a continuous and efficient QAP to improve treatment quality of study patients. For early favorable and unfavorable HL a central prospective review of all diagnostic imaging is performed by expert radiation oncologists to control the disease extension and to define the IF treatment volume. Retrospective analysis of RT portals by an expert panel detects faults in the applied irradiation. Participants are trained on the definition of IF-RT by workshops on the occasion of annual GHSg meetings and on the annual meetings of the German Society of Therapeutic Radiation Oncology (DEGRO). For the advanced stages a multidisciplinary panel evaluates the treatment response to chemotherapy. Patients with a poor response receive additional RT due to the panel's recommendation. The introduction of teleradiotherapy into the GHSg trials improves the dialogue between the central RT reference center and study participants and thus contributes to high RT quality for study patients.

Newbould, J., et al. (2017). "Evaluation of telephone first approach to demand management in English general practice: observational study." *Bmj* **358**: j4197.

Objective To evaluate a "telephone first" approach, in which all patients wanting to see a general practitioner (GP) are asked to speak to a GP on the phone before being given an appointment for a face to face consultation. Design Time series and cross sectional analysis of routine healthcare data, data from national surveys, and primary survey data. Participants 147 general practices adopting the telephone first approach compared with a 10% random sample of other practices in England. Intervention Management support for workload planning and introduction of the telephone first approach provided by two commercial companies. Main outcome measures Number of consultations, total time consulting (59 telephone first practices, no controls). Patient experience (GP Patient Survey, telephone first practices plus controls). Use and costs of secondary care (hospital episode statistics, telephone first practices plus controls). The main analysis was intention to treat, with sensitivity analyses restricted to practices thought to be closely following the companies' protocols. Results After the introduction of the telephone first approach, face to face consultations decreased considerably (adjusted change within practices -38%, 95% confidence interval -45% to -29%; $P < 0.001$). An average practice experienced a 12-fold increase in telephone consultations (1204%, 633% to 2290%; $P < 0.001$). The average duration of both telephone and face to face consultations decreased, but there was an overall increase of 8% in the mean time spent consulting by GPs, albeit with large uncertainty on this estimate (95% confidence interval -1% to 17%; $P = 0.088$). These average workload figures mask wide variation between practices, with some practices experiencing a substantial reduction in workload and others a large increase. Compared with other English practices in the national GP Patient Survey, in practices using the telephone first approach there was a large (20.0 percentage points, 95% confidence interval 18.2 to 21.9; $P < 0.001$) improvement in length of time to be seen. In contrast, other scores on the GP Patient Survey were slightly more negative. Introduction of the telephone first approach was followed by a small (2.0%) increase in hospital admissions (95% confidence interval 1% to 3%; $P = 0.006$), no initial change in emergency department attendance, but a small (2% per year) decrease in the subsequent rate of rise of emergency department attendance (1% to 3%; $P = 0.005$). There was a small net increase in secondary care costs. Conclusions The telephone first approach shows that many problems in general practice can be dealt with over the phone. The approach does not suit all patients or practices and is not a panacea for

meeting demand. There was no evidence to support claims that the approach would, on average, save costs or reduce use of secondary care.

Nijhof, N., et al. (2013). "An evaluation of preventive sensor technology for dementia care." J Telemed Telecare **19**(2): 95-100.

We evaluated a commercially-available monitoring system for older people with dementia living at home. The system was designed to detect problems before they require crisis intervention. Fourteen clients from two healthcare organisations in the Netherlands used the system over a 9-month period. The formal and informal caregivers were interviewed, project group meetings were observed, nurse diaries were analysed and a cost analysis performed. Clients and informal caregivers reported enhanced feelings of safety and security as a result of having the system installed in the home. The system appeared to reduce the burden of care on the informal caregiver and had the potential to allow people to live at home for longer. There were financial savings for clients staying at home with the technology compared with the costs of staying in a nursing home: for 10 clients living at home for 2 months, the savings were 23,665 euro. The study showed that the monitoring system represents a potentially useful early warning system to detect a situation before it requires emergency intervention.

Nordgren, A. (2014). "Remote monitoring or close encounters? Ethical considerations in priority setting regarding telecare." Health Care Anal **22**(4): 325-339.

The proportion of elderly in society is growing rapidly, leading to increasing health care costs. New remote monitoring technologies are expected to lower these costs by reducing the number of close encounters with health care professionals, for example the number of visits to health care centres. In this paper, I discuss issues of priority setting raised by this expectation. As a starting-point, I analyse the recent debate on principles for priority setting in Sweden. The Swedish debate illustrates that developing an approach to priority setting is an ongoing process. On the basis of this analysis, I conclude that several different ethical principles, and specifications of these principles, can be appealed to for giving priority--over close encounters--to a large-scale introduction of remote monitoring technologies in health care services to elderly people, but also that many specifications can be appealed to against giving such priority. I propose that given the different views on principles, it is necessary to develop fair procedures of deliberation on these principles and their application, in particular in order to reach agreement on exactly how much resources should be allocated to remote monitoring and how much to close encounters. I also present a few points to consider in a large-scale introduction of remote monitoring.

Nymark, L. S., et al. (2013). "Analysis of the impact of the Birmingham OwnHealth program on secondary care utilization and cost: a retrospective cohort study." Telemed J E Health **19**(12): 949-955.

BACKGROUND: This study aimed to assess the impact of the Birmingham OwnHealth((R)) program (a partnership among the National Health Service [NHS] Birmingham East and North, formerly Birmingham East and North PCT, as the commissioner, Pfizer Health Solutions [Tadworth, United Kingdom] as the primary contractor, and NHS Direct as a subcontractor) on the number of unscheduled secondary care spells and the cost of care for patients with long-term conditions. This article reports a retrospective cohort study conducted at the NHS Birmingham East and North. **SUBJECTS AND METHODS:** Adults with at least 1 of 10 defined long-term conditions were eligible for inclusion. Patients in the OwnHealth program were compared with those in a matched comparison group from a population who were eligible but did not enroll in the program. The main outcome measures were the difference in the number of secondary care spells (defined as the experience between hospital admission and discharge) between the OwnHealth group and the comparison group and the difference in the cost of care (calculated from the cost of activities during secondary care spells). **RESULTS:** The mean number of secondary care spells per person per year in the OwnHealth group was 0.61 (standard deviation [SD] 1.35) compared with 0.84 (SD 1.49) in the comparison group ($p < 0.0005$). This constituted a 27% reduction in secondary care spells per person per year. The mean cost of secondary care spells per person per year in the OwnHealth group was \$1,305 (SD \$3,138) compared with \$1,678 (SD \$3,485) in the comparison group ($p < 0.0005$). **DISCUSSION:** This difference

in costs constituted a 27% reduction in utilization and 22% reduction in cost of secondary care with the OwnHealth program. CONCLUSIONS: Telehealth intervention can reduce the cost of secondary care of some patients with long-term conditions.

OMS (2010). Telemedicine : Opportunities and developments in Member States, Genève : OMS
http://www.who.int/goe/publications/goe_telemedicine_2010.pdf

Telemedicine can bring the eyes of a specialist to examine a critically ill patient from halfway around the globe. It bridges the distance between people and the best health care available and can be applied to a vast range of situations - from home care to specialized clinical settings. This second volume of the Global Observatory for eHealth series examines trends in the uptake of telemedicine, from the well established to newly emerging telemedicine applications. With an emphasis on the needs of developing countries, it looks to the future with an analysis of the strategic actions required to support and strengthen telemedicine in countries. The publication is targeted at telemedicine practitioners and policymakers in health and information technology, as well as health care practitioners interested in adopting telemedicine services. The data and information would be useful for planning and evaluation of telemedicine service (résumé des éditeurs)

Orueta, J. F., et al. (2013). "[Prevalence and costs of chronicity and multimorbidity in the population covered by the Basque public telecare service]." An Sist Sanit Navar **36**(3): 429-440.

BACKGROUND: The public telecare service in the Basque Autonomous Community (betiON) is a service offered by the Department of Employment and Social Policy of the Basque Government and offers telephone support to elderly and disabled populations, providing communication with an assistance centre. This connection with health care devices makes it possible to implement shared information systems with health and social data, which enable a characterization of the population attended to and the development of integrated models for health and social provision. OBJECTIVE: To describe the distribution of chronic diseases and multimorbidity among users of betiON, to estimate the cost of their health care and to compare these indicators with those of the general population. METHODS: We extracted information from betiON and public healthcare databases. We characterized the telecare population above 65 years (N = 23.742) and compared it with the total population in the Basque Autonomous Community (N = 2.262.707) with respect to variables in demography socio-economic burden, costs and ambulatory care conditions. RESULTS: In the telecare population, the average age is 83 years, 80% are women, 55.1% live alone and reside in poorer neighbourhoods. Forty-two point five per cent of males and 36.5% of women are affected by five or more chronic conditions, averaging 4.06 pathologies per person. They also show higher healthcare costs than the general population. CONCLUSIONS: Telecare users have a higher disease burden, greater need for healthcare and unfavourable social conditions. Telecare provides an opportunity for innovation and intervention, through the coordination of social and healthcare services.

Palsson, T. et Valdimarsdottir, M. (2004). "Review on the state of telemedicine and eHealth in Iceland." Int J Circumpolar Health **63**(4): 349-355.

This article provides an overview of telemedicine and other eHealth activities in Iceland. Several telemedicine projects, which have been running since 1996, are described. The projects include teleradiology, teleobstetrics, telepsychiatry, maritime telemedicine, telemedicine in surgery, telepathology and a project for the use of telemedicine in various consultations. The role of the Icelandic Health-net for telemedicine, including projects for teleobstetrics and telemedicine for emergency medicine, is described with the projects included. A few other eHealth activities, including electronic patient record and information systems, are also described.

Panait, L., et al. (2004). "A review of telemedicine in Romania." J Telemed Telecare **10**(1): 1-5.

Romania is an eastern European country that is undergoing rapid reform of its medical system. We conducted an assessment of the potential for telemedicine in the country, through a literature review, personal visits to Romania and discussions with individuals from academia, the Ministry of Health and Family, and businesses. The results suggest that telemedicine has the potential to accelerate health-

care reform. The main hospitals and universities could promote the wider distribution and development of telemedicine within Romania, which in turn would bring benefits to the Romanian people, 46% of whom live in rural areas.

Parv, L., et al. (2016). "An evaluation of e-prescribing at a national level." *Inform Health Soc Care* **41**(1): 78-95.

OBJECTIVE: The aim of the article is to describe the process of implementing the Estonian national second generation electronic prescription service (e-prescription) and determine if the objectives set by the Estonian government were fulfilled. **MATERIALS AND METHODS:** The study presents an analysis of both retrospective and current data in the evaluation phase of a design research project. Sources include, among others, publicly available documents and previous evaluation studies. **RESULTS:** According to all of the major stakeholders, the Estonian e-prescription service has very high usability and user satisfaction scores have been high. There is only little empirical evidence available to confirm if the benefits aimed for in the creation of the service were achieved. From a public administration viewpoint, the implementation of e-prescription has led to potential efficiency gains. **CONCLUSION:** The Estonian second-generation e-prescription system is widely used by citizens, healthcare providers and administrators alike. However, there are gaps in measuring the impact of the service, especially with respect to time savings and enhanced healthcare quality. Additional functionalities will be key drivers in creating benefits for all stakeholders. Future nationwide e-health services should have a more rigorous evaluation process carried out during the design and implementation stages.

Perilli, R., et al. (2016). "Teleretinography into diabetes integrated care: an Italian experience." *Ann Ist Super Sanita* **52**(4): 598-602.

INTRODUCTION: Integrated care, by allowing information exchange among health professionals, improves outcomes and favours a reduction in hospital admission in diabetes. Retinal complications can be sight-threatening, and diabetic patients often miss the suggested yearly clinical examination. **METHODS:** Teleretinography can be easily performed in patients attending Diabetes Clinics: images are sent to a remote ophthalmologist, grading and instructions are received and forwarded to General Practitioners by a dedicated software. **RESULTS:** We here report the results of teleretinography performed in our Diabetes Clinic in 362 patients missing the yearly fundus examination: 253 patients showed no diabetic retinopathy, 86 a mild form, and 23 needed referral to hospital settings. **CONCLUSIONS:** Teleretinography is a user-friendly, time-saving and cost-effective technique, easily integrable into integrated care, allowing a better adherence to guidelines.

Perings, S. M., et al. (2013). "Home Monitoring technology and integrated follow-up care of ICD patients." *Acta Cardiol* **68**(4): 381-386.

OBJECTIVE: Increasing utilization rates of implantable cardioverter-defibrillators (ICDs) tend to overburden follow-up resources at the implanting electrophysiological centres (ECs). Remote monitoring technology allows physicians from different institutions to simultaneously review ICD data of shared patients. We studied if an integrated follow-up care involving ECs and general cardiologists (GCs) may reduce the frequency of in-office follow-ups at ECs by using remote monitoring data to identify routine checks that may be conducted at GCs. **METHODS AND RESULTS:** The analysis included 109 patients (aged 63 +/- 11 years, 84.4% male) followed for a cumulative study duration of 155 patient-years. The patients underwent 436 in-office controls after hospital discharge: 143 (33%) at two ECs and 293 (67%) at two GCs (each cooperating with one EC). The mean duration of in-office follow-up sessions was 13.7 min (EC) and 10.3 min (GC). The average distance between patients' homes and follow-up sites was 31.6 km (EC) vs. 16.2 km (GC). Investigators considered a follow-up to be of 'high or medium' importance in 78% (EC) vs. 45% (GC) of all in-office follow-ups. At one EC, the integrated follow-up care concept appeared highly successful, with 97% of follow-ups transferred to the corresponding GC and, on average, 103.8 km shorter patient trips per follow-up. **CONCLUSIONS:** Integrated follow-up care guided by remote monitoring allows to direct the more significant follow-ups towards ECs and routine follow-ups towards GCs. This concept may contribute to the needed adaptations of the health-care system to the rising numbers of patients with implanted devices.

Prescott, E., et al. (2016). "A European study on effectiveness and sustainability of current Cardiac Rehabilitation programmes in the Elderly: Design of the EU-CaRE randomised controlled trial." Eur J Prev Cardiol **23**(2 suppl): 27-40.

BACKGROUND: Cardiac rehabilitation (CR) is an evidence-based intervention to increase survival and quality of life. Yet studies consistently show that elderly patients are less frequently referred to CR, show less uptake and more often drop out of CR programmes. **DESIGN:** The European study on effectiveness and sustainability of current cardiac rehabilitation programmes in the elderly (EU-CaRE) project consists of an observational study and an open prospective, investigator-initiated multicentre randomised controlled trial (RCT) involving mobile telemonitoring guided CR (mCR). **OBJECTIVE:** The aim of EU-CaRE is to map the efficiency of current CR of the elderly in Europe, and to investigate whether mCR is an effective alternative in terms of efficacy, adherence and sustainability. **METHODS AND RESULTS:** The EU-CaRE study includes patients aged 65 years or older with ischaemic heart disease or who have undergone heart valve surgery. A total of 1760 patients participating in existing CR programmes in eight regions of Europe will be included. Of patients declining regular CR, 238 will be included in the RCT and randomised in two study arms. The experimental group (mCR) will receive a personalised home-based programme while the control group will receive no advice or coaching throughout the study period. Outcomes will be assessed after the end of CR and at 12 months follow-up. The primary outcome is VO₂peak and secondary outcomes include variables describing CR uptake, adherence, efficacy and sustainability. **CONCLUSION:** The study will provide important information to improve CR in the elderly. The EU-CaRE RCT is the first European multicentre study of mCR as an alternative for elderly patients not attending usual CR.

Pricewaterhousecoopers (2013). Socio-economic impact of mHealth. An assessment report for the European Union. Neuilly-sur Seine Pricewaterhousecoopers: 28.

<https://www.pwc.in/publications/publications-2013/socio-economic-impact-of-mhealth-an-assessment-report-for-the-european-union.html>

Selon cette étude prospective, le déploiement de la technologie mobile dans le domaine de la santé, ou m-Santé, permettrait d'augmenter le PIB de l'Union européenne de 93 milliards d'euros en 2017 grâce à l'amélioration de l'état de santé qui réduirait la perte de jours de travail et les retraites anticipées. Les économies réalisées faciliteraient l'accès aux soins de 24,5 millions patients supplémentaires. Une généralisation de l'utilisation des solutions mobiles contribuerait à une gestion optimisée des maladies chroniques et des conséquences liées au vieillissement de la population, deux des priorités de l'Union européenne. Selon PwC, l'atteinte de ces effets positifs suppose néanmoins l'intégration rapide de la m-Santé dans la stratégie de santé publique de l'Union européenne. Pour ce faire, les états membres doivent lever de nombreux freins d'ordre réglementaire, économique, structurel et technologique, qui limitent actuellement son développement.

Providencia, R., et al. (2014). "Financial impact of adopting implantable loop recorder diagnostic for unexplained syncope compared with conventional diagnostic pathway in Portugal." BMC Cardiovasc Disord **14**: 63.

BACKGROUND: To estimate the short- and long-term financial impact of early referral for implantable loop recorder diagnostic (ILR) versus conventional diagnostic pathway (CDP) in the management of unexplained syncope (US) in the Portuguese National Health Service (PNHS). **METHODS:** A Markov model was developed to estimate the expected number of hospital admissions due to US and its respective financial impact in patients implanted with ILR versus CDP. The average cost of a syncope episode admission was estimated based on Portuguese cost data and landmark papers. The financial impact of ILR adoption was estimated for a total of 197 patients with US, based on the number of syncope admissions per year in the PNHS. Sensitivity analysis was performed to take into account the effect of uncertainty in the input parameters (hazard ratio of death; number of syncope events per year; probabilities and unit costs of each diagnostic test; probability of trauma and yield of diagnosis) over three-year and lifetime horizons. **RESULTS:** The average cost of a syncope event was estimated to be between 1,760euro and 2,800euro. Over a lifetime horizon, the total discounted costs of hospital admissions and syncope diagnosis for the entire cohort were 23% lower amongst patients in the ILR group compared with the CDP group (1,204,621euro for ILR, versus 1,571,332euro for CDP).

CONCLUSION: The utilization of ILR leads to an earlier diagnosis and lower number of syncope hospital admissions and investigations, thus allowing significant cost offsets in the Portuguese setting. The result is robust to changes in the input parameter values, and cost savings become more pronounced over time.

Reponen, J. (2004). "Radiology as a part of a comprehensive telemedicine and eHealth network in Northern Finland." *Int J Circumpolar Health* **63**(4): 429-435.

Oulu University Hospital is the northernmost tertiary hospital in Finland and its responsibility area is the largest in the country, covering nearly half of the Finnish territory, also including the arctic regions. Because of vast distances and a sparse population, Oulu has been a forerunner in developing telemedicine and eHealth services in the country. The development started in 1990 and has resulted in the establishment of teleradiology and televideoconferencing services, distance education and a multimedia medical record with remote access capabilities. Wireless technology has been a special focus area, as has the development of an efficient communication between primary care and secondary care. This review highlights some of the key success elements.

Ricci, R. P., et al. (2015). "[Remote monitoring of implantable cardiac devices: health technology assessment]." *G Ital Cardiol (Rome)* **16**(5): 295-303.

Clinical follow-up of patients with cardiac implantable electronic devices is challenging because of the increasing technical complexity of devices and clinical complexity of patients. Remote monitoring (RM) offers the opportunity to optimize clinic workflow and to improve device monitoring and patient management by reducing in-hospital visits, physician and nurse time required for patient follow-up, and hospital and social costs. Continuous RM may lead to early detection of device malfunctions and clinical events, such as arrhythmias and heart failure. Early reaction may improve patient outcome. RM is easy to use and patients show a high level of acceptance and satisfaction. Implementing RM in daily practice may require changes in clinical workflow. Primary nursing-based models have demonstrated the best results. In spite of a favorable cost-benefit ratio, RM reimbursement still represents an issue in several European countries, including Italy, which limits widespread RM utilization. The fee-for-service payment approach, the global budget for device patient follow-up and/or integrated care packages for heart failure management represent the keys to introduce reimbursement and to improve patient care, while reducing healthcare costs.

Ricci, R. P., et al. (2017). "Economic analysis of remote monitoring of cardiac implantable electronic devices: Results of the Health Economics Evaluation Registry for Remote Follow-up (TARIFF) study." *Heart Rhythm* **14**(1): 50-57.

BACKGROUND: Remote monitoring (RM) of cardiac implantable electronic devices has been demonstrated to improve outpatient clinic workflow and patient management. However, few data are available on the socioeconomic impact of RM. OBJECTIVE: The aim of this study was to assess the costs and benefits of RM compared with standard care (SC). METHODS: We used 12-month patient data from the Health Economics Evaluation Registry for Remote Follow-up (TARIFF) study (N = 209; RM: n = 102 (48.81%); SC: n = 107 (51.19%)). Cost comparison was made from 2 perspectives: the health care system (HCS) and patients. The use of health care resources was defined on the basis of hospital clinical folders. Out-of-pocket expenses were reported directly by patients. RESULTS: HCS perspective: The overall mean annual cost per patient in the SC group (euro1044.89 +/- euro1990.47) was significantly higher than in the RM group (euro482.87 +/- euro2488.10) (P < .0001), with a reduction of 53.87% being achieved in the RM group. The primary driver of cost reduction was the cost of cardiovascular hospitalizations (SC: euro`886.67 +/- euro1979.13 vs RM: euro432.34 +/- euro2488.10; P = .0030). Patient and caregiver perspective: The annual cost incurred by patients was significantly higher in the SC group than in the RM group (SC: euro169.49 +/- euro189.50 vs RM: euro56.87 +/- euro80.22; P < .0001). Patients' quality-adjusted life-years were not significantly different between the groups. Provider perspective: The total number of in-hospital device follow-up visits was reduced by 58.78% in the RM group. CONCLUSION: RM of patients with cardiac implantable electronic devices (CIEDs) is cost saving from the perspectives of the HCS, patients, and caregivers.

Introducing appropriate reimbursements will make RM sustainable even for the provider, i.e. the hospitals which provide the service and encourage widespread adoption of RM.

Ricci, R. P., et al. (2013). "Impact of in-clinic follow-up visits in patients with implantable cardioverter defibrillators: demographic and socioeconomic analysis of the TARIFF study population." J Interv Card Electrophysiol **38**(2): 101-106.

PURPOSE: Remote monitoring of cardiac implantable electronic devices has been demonstrated to safely reduce frequency of hospital visits. Limited studies are available evaluating the economic impact. The aim of this article is to highlight the social impact and costs for the patients associated with hospital visits for routine device follow-up at the enrollment visit for the TARIFF study (NCT01075516). **METHODS:** TARIFF is a prospective, cohort, observational study designed to compare the costs and impact on quality of life between clinic-based and remote care device follow-up strategies. **RESULTS:** Two hundred nine patients (85.2 % males) were enrolled in the study; 153 patients (73.2 %) were retired, 36 (17.2 %) were active workers, 18 (8.6 %) were housewives, and 2 (1.0 %) were looking for a job. Among active workers, 63.9 % required time off from work to attend the hospital visit, while 67.0 % of all patients had to interrupt daily activities. The majority of patients spent half a day or more attending the visit. A carer accompanied 77 % of patients. Among carers, 36.6 % required time off from work, and 77.6 % had to interrupt daily activities. Median distance traveled was 36 km. The average cost of travel was 10 euros with 25 % of patients spending more than 30 euros. **CONCLUSIONS:** Data from patients enrolled in the TARIFF registry confirm that there are social and economic impacts to patients attending routine device checks in hospital which can be significantly reduced by using a remote monitoring strategy.

Richard, E., et al. (2016). "Healthy Ageing Through Internet Counselling in the Elderly: the HATICE randomised controlled trial for the prevention of cardiovascular disease and cognitive impairment." Bmj Open **6**(6): e010806.

INTRODUCTION: Cardiovascular disease and dementia share a number of risk factors including hypertension, hypercholesterolaemia, smoking, obesity, diabetes and physical inactivity. The rise of eHealth has led to increasing opportunities for large-scale delivery of prevention programmes encouraging self-management. The aim of this study is to investigate whether a multidomain intervention to optimise self-management of cardiovascular risk factors in older individuals, delivered through an coach-supported interactive internet platform, can improve the cardiovascular risk profile and reduce the risk of cardiovascular disease and cognitive decline. **METHODS AND ANALYSIS:** HATICE is a multinational, multicentre, prospective, randomised, open-label blinded end point (PROBE) trial with 18 months intervention. Recruitment of 2600 older people (≥ 65 years) at increased risk of cardiovascular disease will take place in the Netherlands, Finland and France. Participants randomised to the intervention condition will have access to an interactive internet platform, stimulating self-management of vascular risk factors, with remote support by a coach. Participants in the control group will have access to a static internet platform with basic health information. The primary outcome is a composite score based on the average z-score of the difference between baseline and 18 months follow-up values of systolic blood pressure, low-density-lipoprotein and body mass index. Main secondary outcomes include the effect on the individual components of the primary outcome, the effect on lifestyle-related risk factors, incident cardiovascular disease, mortality, cognitive functioning, mood and cost-effectiveness. **ETHICS AND DISSEMINATION:** The study was approved by the medical ethics committee of the Academic Medical Center in Amsterdam, the Comité de Protection des Personnes Sud Ouest et Outre Mer in France and the Northern Savo Hospital District Research Ethics Committee in Finland. We expect that data from this study will result in a manuscript published in a peer-reviewed clinical open access journal. **TRIAL REGISTRATION NUMBER:** ISRCTN48151589.

Rigby, M. (1999). "The management and policy challenges of the globalisation effect of informatics and telemedicine." Health Policy **46**(2): 97-103, tabl.
[http://www.healthpolicyjrn.com/article/S0168-8510\(98\)00055-4/abstract](http://www.healthpolicyjrn.com/article/S0168-8510(98)00055-4/abstract)

Le développement récent des nouvelles technologies (télémédecine, informatique médicale, internet) a complètement bouleversé l'organisation du système de soins. L'objectif de cet article est d'étudier ces changements radicaux, et la manière dont les décideurs doivent y faire face, pour que cette nouvelle société d'information ne devienne pas un cauchemar pour des victimes innocentes. Ce papier se base sur une communication donnée lors de la conférence annuelle de « l'European Healthcare Management Association », Dublin, juin 1998.

Roberts, A., et al. (2012). "Can telehealth deliver for rural Scotland? Lessons from the Argyll & Bute Telehealth Programme." *Scott Med J* **57**(1): 33-37.

Policy-makers consider telehealth to be a potential solution to delivery of care in rural Scotland. Telehealth can support patients in the community and may reduce emergency admissions to hospital. The Argyll & Bute telehealth initiative, which commenced in 2007, trialled home telehealth monitoring of patients with chronic obstructive pulmonary disease (COPD), and community- and surgery-based monitoring of general wellbeing and hypertension. An evaluation in 2010 assessed staff and patient satisfaction by questionnaire, impact on hospital and general practice attendance by case record review and detailed opinions on the programme by qualitative interviews with key staff. Home monitoring for COPD was associated with high levels of patient satisfaction and a reduction in hospital admissions and other health service contacts. Delays in implementation and some technical challenges compromised evaluation of the surgery and community initiatives. Patients and staff were generally enthusiastic but also identified potential barriers to development. This paper describes the implementation and outcomes of the initiative and identifies issues that clinicians embarking on telehealth programmes must consider: technical factors; governance and security; staff profiling and training; clinical outcomes; and scalability.

Rodriguez Villa, S., et al. (2016). "Five-year experience of tele-ophthalmology for diabetic retinopathy screening in a rural population." *Arch Soc Esp Ophthalmol* **91**(9): 426-430.

OBJECTIVE: To identify the prevalence and risk factors of diabetic retinopathy (DR) among rural inhabitants included in a tele-ophthalmology program. To analyse diagnostic accuracy among primary care physicians, concordance with ophthalmologists, and financial savings. **MATERIAL AND METHODS:** An observational randomised study was conducted on 394 patients included in a tele-ophthalmology program (from January 2010 to January 2015). An analysis was performed on the clinical characteristics, DR findings in retinography images, and correspondence between the request for a second interpretation by an ophthalmologist, and previously established criteria for it: presence of moderate to severe DR, vision loss, poor image quality and/or intraocular pressure >22mmHg. Statistical analysis was performed using the SPSS program (Student t and chi(2) tests). **RESULTS:** DR prevalence was 12.1%. Patients with glycosylated haemoglobin values >7.68% or those treated with a combination of insulin and oral antidiabetic drugs showed a higher risk of DR (P<.05). 43.3% of patients correctly referred to ophthalmologists showed moderate to severe DR. Unnecessary referrals to specialists were improved from 91.7% in 2010 to 98.6% in 2014. It is estimated that the program has made a total saving of euro152,550.45. **CONCLUSIONS:** Tele-ophthalmology programs are a useful tool in DR screening. Primary care physicians are able to distinguish patients who need specialist care, avoiding unnecessary referrals to ophthalmologists, and saving costs.

Rohman, L., et al. (2015). "The impact of a text messaging service on orthopaedic clinic Did Not Attend rates." *J Telemed Telecare* **21**(7): 408-413.

BACKGROUND: Missed clinic appointments cause delays in treatment of other patients, under utilization of clinical manpower or facilities and impact upon hospital finances. **AIMS:** The primary aim of this study is to evaluate whether a text messaging reminder service reduces the Did Not Attend rate. The secondary aim is to evaluate the cost-effectiveness of a mobile text message reminder service. **METHODS:** The study focused on the outpatient department of a district general hospital. In January 2011 a patient text messaging reminder service was implemented across the outpatient departments in the trust. Data were collected prospectively 24 months prior and 24 months following the implementation of this service. A reminder was sent to patients one week prior to the scheduled appointment as a text message. All patients attending the orthopaedic department were included in

the study. Patients who had an appointment and cancelled/rescheduled it prior to their original consultation date were excluded. Children were also excluded from the study. RESULTS: The overall Did Not Attend rate was reduced by 12% following the intervention ($p < 0.0001$). The new appointment follow-up rate was reduced by 2% ($p = 0.74$) and the follow-up rate decreased by 13.7% ($p < 0.0001$). The economic analysis revealed a saving of pound19,853 over a two-year period following the intervention. CONCLUSION: Thus mobile technology is a feasible tool in improving attendance rates at outpatient clinics and is economically viable.

Rosenberg, C., et al. (2013). "Teleradiology from the provider's perspective-cost analysis for a mid-size university hospital." *Eur Radiol* **23**(8): 2197-2205.

OBJECTIVES: Real costs of teleradiology services have not been systematically calculated. Pricing policies are not evidence-based. This study aims to prove the feasibility of performing an original cost analysis for teleradiology services and show break-even points to perform cost-effective practice. METHODS: Based on the teleradiology services provided by the Greifswald University Hospital in northeastern Germany, a detailed process analysis and an activity-based costing model revealed costs per service unit according to eight examination categories. The Monte Carlo method was used to simulate the cost amplitude and identify pricing thresholds. RESULTS: Twenty-two sub-processes and four staff categories were identified. The average working time for one unit was 55 (x-ray) to 72 min (whole-body CT). Personnel costs were dominant (up to 68 %), representing lower limit costs. The Monte Carlo method showed the cost distribution per category according to the deficiency risk. Avoiding deficient pricing by a likelihood of 90 % increased the cost of a cranial CT almost twofold as compared with the lower limit cost. CONCLUSIONS: Original cost analysis is possible when providing teleradiology services with complex statutory requirements in place. Methodology and results provide useful data to help enhance efficiency in hospital management as well as implement realistic reimbursement fees. KEY POINTS: * Analysis of original costs of teleradiology is possible for a providing hospital * Results discriminate pricing thresholds and lower limit costs to perform cost-effective practice * The study methods represent a managing tool to enhance efficiency in providing facilities * The data are useful to help represent telemedicine services in regular medical fee schedules.

Ruhdel, I. (2007). "[Revision of the EU Directive 86/609/EEC: results of the Internet consultations of the European Commission]." *Altex* **24**(1): 41-45.

In the context of the process of revising EU Directive 86/609/EEC on the protection of animals used in experiments, the European Commission conducted a public internet consultation for EU citizens in mid-2006. Simultaneously, the Commission requested opinions from experts on specific animal welfare issues. The results of both consultations were published in the internet in December 2006. An overwhelming majority of EU citizens answered that the protection of laboratory animals currently is poor and that efforts are needed to improve the level of welfare for these animals. Additionally, they request increased transparency and public participation in the determination when and how the use of animals in experiments is to be considered acceptable. They also asked for an increased promotion of the research for replacing animal experiments. Amongst other issues, the experts called for an extension of the scope of the Directive to also cover animals used in basic research and the establishment of a compulsory authorization procedure which should include a concrete ethical review process. The estimations put forward on the consequences of introducing a retrospective analysis of projects with animal experiments were controversial just as the opinions submitted regarding different options regarding a ban to using wild caught primates and their direct offspring. All in all, both the responses of the citizens and experts consultations are a promising basis to justify the need to improve the protection of animals used in experiments within the EU.

Saigi-Rubio, F., et al. (2016). "DETERMINANTS OF THE INTENTION TO USE TELEMEDICINE: EVIDENCE FROM PRIMARY CARE PHYSICIANS." *Int J Technol Assess Health Care* **32**(1-2): 29-36.

OBJECTIVES: While most studies have focused on analyzing the results of telemedicine use, it is crucial to consider the determinants of its use to fully understand the issue. This article aims to provide evidence on the determinants of telemedicine use in clinical practice. METHODS: The survey targeted

a total population of 398 medical professionals from a healthcare institution in Spain. The study sample was formed by the ninety-three primary care physicians who responded. Using an extended Technology Acceptance Model and microdata for the ninety-six physicians, binary logistic regression analysis was carried out. RESULTS: The analysis performed confirmed the model's goodness-of-fit, which allowed 48.1 percent of the dependent variable's variance to be explained. The outcomes revealed that the physicians at the healthcare institution placed greater importance on telemedicine's potential to reduce costs, and on its usefulness to the medical profession. The perception of medical information security and confidentiality and the patients' predisposition toward telemedicine were the second explanatory factors in order of importance. A third set of moderating effects would appear to corroborate the importance of the physicians' own opinions. CONCLUSIONS: These results have revealed the need for a dynamic approach to the design of telemedicine use, especially when it targets a variety of end-users. Hence, the importance of conducting studies before using telemedicine, and attempting to identify which of the above-mentioned predictors exert an influence and how.

Salisbury, C., et al. (2016). "Telehealth for patients at high risk of cardiovascular disease: pragmatic randomised controlled trial." *Bmj* **353**: i2647.

OBJECTIVE: To assess whether non-clinical staff can effectively manage people at high risk of cardiovascular disease using digital health technologies. DESIGN: Pragmatic, multicentre, randomised controlled trial. SETTING: 42 general practices in three areas of England. PARTICIPANTS: Between 3 December 2012 and 23 July 2013 we recruited 641 adults aged 40 to 74 years with a 10 year cardiovascular disease risk of 20% or more, no previous cardiovascular event, at least one modifiable risk factor (systolic blood pressure ≥ 140 mm Hg, body mass index ≥ 30 , current smoker), and access to a telephone, the internet, and email. Participants were individually allocated to intervention (n=325) or control (n=316) groups using automated randomisation stratified by site, minimised by practice and baseline risk score. INTERVENTIONS: Intervention was the Healthlines service (alongside usual care), comprising regular telephone calls from trained lay health advisors following scripts generated by interactive software. Advisors facilitated self management by supporting participants to use online resources to reduce risk factors, and sought to optimise drug use, improve treatment adherence, and encourage healthier lifestyles. The control group comprised usual care alone. MAIN OUTCOME MEASURES: The primary outcome was the proportion of participants responding to treatment, defined as maintaining or reducing their cardiovascular risk after 12 months. Outcomes were collected six and 12 months after randomisation and analysed masked. Participants were not masked. RESULTS: 50% (148/295) of participants in the intervention group responded to treatment compared with 43% (124/291) in the control group (adjusted odds ratio 1.3, 95% confidence interval 1.0 to 1.9; number needed to treat=13); a difference possibly due to chance (P=0.08). The intervention was associated with reductions in blood pressure (difference in mean systolic -2.7 mm Hg (95% confidence interval -4.7 to -0.6 mm Hg), mean diastolic -2.8 (-4.0 to -1.6 mm Hg); weight -1.0 kg (-1.8 to -0.3 kg), and body mass index -0.4 (-0.6 to -0.1) but not cholesterol -0.1 (-0.2 to 0.0), smoking status (adjusted odds ratio 0.4, 0.2 to 1.0), or overall cardiovascular risk as a continuous measure (-0.4, -1.2 to 0.3)). The intervention was associated with improvements in diet, physical activity, drug adherence, and satisfaction with access to care, treatment received, and care coordination. One serious related adverse event occurred, when a participant was admitted to hospital with low blood pressure. CONCLUSIONS: This evidence based telehealth approach was associated with small clinical benefits for a minority of people with high cardiovascular risk, and there was no overall improvement in average risk. The Healthlines service was, however, associated with improvements in some risk behaviours, and in perceptions of support and access to care. Trial registration Current Controlled Trials ISRCTN 27508731.

Santoro, E. et Pansadoro, V. (2013). "Robotic surgery in Italy national survey (2011)." *Updates Surg* **65**(1): 1-9.

Robotic surgery in Italy has become a clinical reality that is gaining increasing acceptance. As of 2011 after the United States, Italy together with Germany is the country with the largest number of active Robotic centers, 46, and da Vinci Robots installed, with at least 116 operators already trained. The number of interventions performed in Italy in 2011 exceeded 6,000 and in 2010 were 4,784, with prevalence for urology, general surgery and gynecology, however these interventions have also begun to be applied in other fields such as cervicofacial, cardiothoracic and pediatric surgery. In Italy Robotic

centers are mostly located in Northern Italy, while in the South there are only a few centers, and four regions are lacking altogether. Of the 46 centers which were started in 1999, the vast majority is still operational and almost half handle over 200 cases a year. The quality of the work is also especially high with large diffusion of radical prostatectomy in urology and liver resection and colic in general surgery. The method is very well accepted among operators, over 80 %, and among patients, over 95 %. From the analysis of world literature and a survey carried out in Italy, Robotic surgery, which at the moment could be better defined as telesurgery, represents a significant advantage for operators and a consistent gain for the patient. However, it still has important limits such as high cost and non-structured training of operators.

Schenkel, J., et al. (2013). "[Cost analysis of telemedical treatment of stroke]." *Gesundheitswesen* **75**(7): 405-412.

BACKGROUND: Telemedicine-enabled stroke networks increase the probability of a good clinical outcome. There is a shortage of evidence about the effects of this new approach on costs for inpatient care and nursing care. **METHODS:** We analysed health insurance and nursing care fund data of a statutory health insurance company (AOK Bayern). Data from stroke patients initially treated in a TeleStroke network (TEMPiS - telemedical project for integrative stroke care) between community hospitals and academic stroke centres were compared to data of matched hospitals without specialised stroke care and telemedical support. Costs for nursing care were obtained over a 30-month period after the initial stroke. To rule out pre-existing differences between network and control hospitals, costs of stroke care were also analysed during a time period before network implementation. **FINDINGS:** 1 277 patients (767 in intervention, 510 in control hospitals) were analysed in the post-implementation period. An increased proportion of patients treated in intervention hospitals had a favourable outcome concerning the level of required nursing care. Patients in intervention hospitals had higher costs for acute inpatient care (5 309 euro vs. 4 901 euro, $p=0.04$), but lower nursing care fund costs (3 946 euro vs. 5 132 euro; $p=0.04$). There was no difference in relation to absolute total costs obtained in the post-implementation period. However, nursing care costs per survived year were significantly lower in intervention hospitals (1 953 euro vs. 2 635 euro; $p=0.005$). No significant differences were found in the pre-implementation period. **CONCLUSIONS:** Considering both health insurance and nursing care fund costs, the incremental costs for TeleStroke network care in hospitals are compensated by savings in outpatient care.

Schmidt, S. et Grimm, A. (2009). "[Health service research of telemedicine applications]." *Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz* **52**(3): 270-278.

The current descriptive review summarizes health service research in the area of telemedicine and health telematics with respect to the increasing, but slow implementation of health telematics in medical care. Findings of the review are summarized under three areas: the prevalence and use of three selected applications (computerized physician prescriptions, electronic health records, and electronic decision support). Findings of the review show that there is only very limited research on the impact of telemedicine on routine care in the selected study areas. In general, only a small percentage of physicians actively use the more comprehensive functions of electronic health records or electronic prescribing and there is almost no evidence showing a relationship between outcomes of health care and the implementation of electronic health records on a broad level despite some evidence concerning the impact of clinical decision support.

Seithe, T., et al. (2015). "[Teleradiological report turnaround times: An internal efficiency and quality control analysis]." *Radiologe* **55**(5): 409-416.

AIMS: The teleradiological examinations performed at the Charite were analyzed for the purpose of internal quality and efficiency control. Data included the type and number of examinations performed, the time of day and week the examination was performed and the differences in teleradiologist report turnaround times. **MATERIAL AND METHODS:** A retrospective analysis of the radiology information system (RIS) database of all teleradiological computed tomography examinations performed at the Charite from 2011 through 2013 was carried out. The search retrieved 10,200 teleradiological examinations which were included in the analysis. The records were analyzed for the time of the day

and week the examination was performed, the interval between examination and time of reporting, the type of teleradiological examination and the campus in which they were performed. RESULTS: The number of teleradiological examinations performed increased continuously during the observation period. Computed tomography of the head was the most frequently performed type of examination with 86%. Taking all forms of examination into consideration it took an average of 34 min until a report was written. Over the 3-year observation period the times remained virtually unaltered. CONCLUSION: During the 3-year observation period nearly constant report times could be observed in spite of the increased numbers of examinations. This indicates an efficiency enhancement and rational integration of teleradiology into the radiological workflow.

Smeets, O., et al. (2014). "[E-health within the Dutch mental health services: what is the current situation?]." Ned Tijdschr Geneeskd **158**: A8589.

The 'e-mental health' currently available, which also covers m-health and i-health, varies from psycho-education and self-tests to self-help, treatment and contact with fellow sufferers. Many programs are based on cognitive behavioural therapy, but other types of therapy are also used. Research shows that online programs for depression, alcohol problems and anxiety can reduce these symptoms and can be cost effective. This applies to both self-help and treatment programs. Many e-programs in the Netherlands have been developed for the Dutch Association of Mental Health and Addiction Care (GGZ) and for treatment of addiction problems. One problem with e-mental-health is that provision is fragmented, and there is no national overview, while insight into quality is important for patients and professionals. The quality hallmark 'Onlinehulpstempel.nl' ('Online help hallmark') provides this insight. The use of e-mental-health within Dutch healthcare services is still in its infancy. New financing methods are stimulating general practitioners to use it. The consolidation of online and face-to-face care ('blended e-health') provides an opportunity for patients and GGZ support personnel within general practice to start to use e-health.

Solana, J., et al. (2015). "Improving brain injury cognitive rehabilitation by personalized telerehabilitation services: Guttman neuropersonal trainer." IEEE J Biomed Health Inform **19**(1): 124-131.

Cognitive rehabilitation aims to remediate or alleviate the cognitive deficits appearing after an episode of acquired brain injury (ABI). The purpose of this work is to describe the telerehabilitation platform called Guttman Neuropersonal Trainer (GNPT) which provides new strategies for cognitive rehabilitation, improving efficiency and access to treatments, and to increase knowledge generation from the process. A cognitive rehabilitation process has been modeled to design and develop the system, which allows neuropsychologists to configure and schedule rehabilitation sessions, consisting of set of personalized computerized cognitive exercises grounded on neuroscience and plasticity principles. It provides remote continuous monitoring of patient's performance, by an asynchronous communication strategy. An automatic knowledge extraction method has been used to implement a decision support system, improving treatment customization. GNPT has been implemented in 27 rehabilitation centers and in 83 patients' homes, facilitating the access to the treatment. In total, 1660 patients have been treated. Usability and cost analysis methodologies have been applied to measure the efficiency in real clinical environments. The usability evaluation reveals a system usability score higher than 70 for all target users. The cost efficiency study results show a relation of 1-20 compared to face-to-face rehabilitation. GNPT enables brain-damaged patients to continue and further extend rehabilitation beyond the hospital, improving the efficiency of the rehabilitation process. It allows customized therapeutic plans, providing information to further development of clinical practice guidelines.

Spoelman, W. A., et al. (2016). "Effect of an evidence-based website on healthcare usage: an interrupted time-series study." Bmj Open **6**(11): e013166.

OBJECTIVES: Healthcare costs and usage are rising. Evidence-based online health information may reduce healthcare usage, but the evidence is scarce. The objective of this study was to determine whether the release of a nationwide evidence-based health website was associated with a reduction in healthcare usage. DESIGN: Interrupted time series analysis of observational primary care data of healthcare use in the Netherlands from 2009 to 2014. SETTING: General community primary care.

POPULATION: 912 000 patients who visited their general practitioners 18.1 million times during the study period. INTERVENTION: In March 2012, an evidence-based health information website was launched by the Dutch College of General Practitioners. It was easily accessible and understandable using plain language. At the end of the study period, the website had 2.9 million unique page views per month. MAIN OUTCOMES MEASURES: Primary outcome was the change in consultation rate (consultations/1000 patients/month) before and after the release of the website. Additionally, a reference group was created by including consultations about topics not being viewed at the website. Subgroup analyses were performed for type of consultations, sex, age and socioeconomic status. RESULTS: After launch of the website, the trend in consultation rate decreased with 1.620 consultations/1000 patients/month ($p < 0.001$). This corresponds to a 12% decline in consultations 2 years after launch of the website. The trend in consultation rate of the reference group showed no change. The subgroup analyses showed a specific decline for consultations by phone and were significant for all other subgroups, except for the youngest age group. CONCLUSIONS: Healthcare usage decreased by 12% after providing high-quality evidence-based online health information. These findings show that e-Health can be effective to improve self-management and reduce healthcare usage in times of increasing healthcare costs.

Stephen, C., et al. (2014). "Valuing telecare using willingness to pay from the perspective of carers for people with dementia: a pilot study from the West Midlands." *J Telemed Telecare* **20**(3): 141-146.

We carried out a cost-benefit analysis of the STAY telecare service (Sandwell Telecare Assisting You) for unpaid carers of people with dementia in the West Midlands. This was done from the perspective of the carers. We employed the willingness to pay (WTP) approach, an established economic method to quantify the benefits of healthcare. A questionnaire was given to 87 unpaid carers of people with dementia, and 34 completed questionnaires were returned (39%). Two WTP question designs were used (open-ended and bounded style). The annual mean WTP for telecare was pound242-310 per person. Carers offered higher values if the cared-for person was suffering from moderate dementia. Carers offered WTP values that were similar to the resource costs of providing telecare services. The pilot study suggests that the provision of telecare for unpaid carers of people with dementia is beneficial to society.

Steventon, A., et al. (2013). "Effect of telecare on use of health and social care services: findings from the Whole Systems Demonstrator cluster randomised trial." *Age Ageing* **42**(4): 501-508.

OBJECTIVE: to assess the impact of telecare on the use of social and health care. Part of the evaluation of the Whole Systems Demonstrator trial. PARTICIPANTS AND SETTING: a total of 2,600 people with social care needs were recruited from 217 general practices in three areas in England. DESIGN: a cluster randomised trial comparing telecare with usual care, general practice being the unit of randomisation. Participants were followed up for 12 months and analyses were conducted as intention-to-treat. DATA SOURCES: trial data were linked at the person level to administrative data sets on care funded at least in part by local authorities or the National Health Service. MAIN OUTCOME MEASURES: the proportion of people admitted to hospital within 12 months. Secondary endpoints included mortality, rates of secondary care use (seven different metrics), contacts with general practitioners and practice nurses, proportion of people admitted to permanent residential or nursing care, weeks in domiciliary social care and notional costs. RESULTS: 46.8% of intervention participants were admitted to hospital, compared with 49.2% of controls. Unadjusted differences were not statistically significant (odds ratio: 0.90, 95% CI: 0.75-1.07, $P = 0.211$). They reached statistical significance after adjusting for baseline covariates, but this was not replicated when adjusting for the predictive risk score. Secondary metrics including impacts on social care use were not statistically significant. CONCLUSIONS: telecare as implemented in the Whole Systems Demonstrator trial did not lead to significant reductions in service use, at least in terms of results assessed over 12 months.

Stoddart, A., et al. (2015). "Telemonitoring for chronic obstructive pulmonary disease: a cost and cost-utility analysis of a randomised controlled trial." *J Telemed Telecare* **21**(2): 108-118.

We compared the costs and cost-effectiveness of telemonitoring vs usual care for patients with chronic obstructive pulmonary disease (COPD). A total of 256 patients were randomised to either telemonitoring or usual care. In the telemonitoring arm, the touch-screen telemonitoring equipment transmitted data to clinical teams monitoring the patients. Total healthcare costs were estimated over a 12-month period from a National Health Service perspective and quality adjusted life year (QALYs) were estimated by the EQ-5D tool. Telemonitoring was not significantly more costly than usual care (mean difference per patient pound2065.90 ($P < 0.18$)). The increased costs were predominantly due to telemonitoring service costs and non-significantly higher secondary care costs. Telemonitoring for COPD was not cost-effective at a base case of pound137,277 per QALY with only 15% probability of being cost-effective at the usual threshold of pound30,000 per QALY. Although there was some statistical and methodological uncertainty in the measures used, telemonitoring was not cost-effective in the sensitivity analyses performed. It seems unlikely that a telemonitoring service of the kind that was trialled would be cost-effective in providing care for people with COPD.

Syburra, T. et Genoni, M. (2008). "[Use of telemedicine in Switzerland]." *Rev Med Suisse* **4**(182): 2652-2654, 2656.

In the 21st century, telemedicine has become daily business. Nevertheless, there is still a lack of precise definitions of telemedicine. Legal and financial implications of telemedical applications are complex, with lots of local restrictions, far beyond global technological aspects. In the United States, telemedicine is a reality since decades, and is basically defined as the provision of health care when distance separates the participants. Technology and networks for telemedicine are universally globalized, but the legal and financial implications are diametrically more local based. Any CT-scan made at midnight in Switzerland can be accurately assessed within minutes by any Australian radiologist, for whom it will be the morning, and so far around the globe at any time of the day or the night. But how will the billing work intercontinentally? And what about legal implications of this telemedical service? In this paper, we review the actual definitions of telemedicine, check our local legal responsibilities, and present the Tarmed financial positions for billing.

Szalewska, D., et al. (2015). "The impact of professional status on the effects of and adherence to the outpatient followed by home-based telemonitored cardiac rehabilitation in patients referred by a social insurance institution." *Int J Occup Med Environ Health* **28**(4): 761-770.

OBJECTIVES: Legislators and policymakers have expressed strong interest in intervention programs to reduce dependence on social disability benefits. Hybrid: ambulatory followed by home-based cardiac telerehabilitation--hybrid cardiac rehabilitation (HCR) seems to be a novel alternative for standard cardiac rehabilitation for patients with cardiovascular diseases (CVD) as a form of pension prevention paid by the Social Insurance Institution (SII). The kind of professional status may bias the motivation to return to work after HCR. The aim of our study was to evaluate whether the professional status can affect the effects of HCR. **MATERIAL AND METHODS:** One hundred fifty-two patients with CVD referred by the SII for a 5-week HCR were qualified for the study. Patients (87.7% males), aged 57.31 +/- 5.61 years, were divided into 2 subgroups: W) white-collar employees (N = 22) and B) blue-collar employees (N = 130). To evaluate functional capacity, an exercise test on a treadmill was used. **RESULTS:** The number of days of absence in the cardiac rehabilitation program did not differ between the groups (mean +/- standard deviation--B: 1.09 +/- 3.10 days, W: 1.95 +/- 3.64 days). There were significant improvements ($p < 0.05$) in measured variables after HCR in both (W and B) groups (max workload: 8.21 +/- 2.88 METs (measured in metabolic equivalents) vs. 9.6 +/- 2.49 METs, 7.76 +/- 2.51 METs vs. 8.73 +/- 2.7 METs, resting heart rate (RHR): 77 +/- 16.22 bpm vs. 69.94 +/- 12.93 bpm, 79.59 +/- 14 bpm vs. 75.24 +/- 11.87 bpm; double product, i.e., product of heart rate and systolic BP (DP rest) 10 815.22 +/- 2968.24 vs. 9242.94 +/- 1923.08, 10 927.62 +/- 2508.47 vs. 9929.7 +/- 2304.94). In group B, a decrease in systolic blood pressure (BP syst. - 137.03 +/- 17.14 mm Hg vs. 131.82 +/- 21.13 mm Hg), heart rate recovery in the 1st minute after the end of peak exercise (HRR1) (99.38 +/- 19.25 vs. 93.9 +/- 19.48) and New York Heart Association (NYHA) class (1.22 +/- 0.53 vs. 1.11 +/- 0.36) was observed. In group W, a decrease in diastolic blood pressure (BP diast.) at rest was observed (88.28 +/- 9.79 mm Hg vs. 83.39 +/- 8.95 mm Hg). The decrease in resting HR was significantly greater in group W (69.94 +/- 12.93 vs. 75.24 +/- 11.87, $p = 0.034$). **CONCLUSIONS:** Hybrid cardiac rehabilitation is feasible

and safe with high adherence to the program regardless of the patient's professional status. Professional status did not influence the beneficial effect of HCR on exercise tolerance.

Tagliaferri, S., et al. (2013). "Governance of innovation and appropriateness of hospitalization for high-risk pregnancy: the TOCOMAT system." *Telemed J E Health* **19**(7): 542-548.

BACKGROUND: Over the last 30 years, a great increase in the application of technologies in public health, with an undisputed impact on both the effectiveness of performance and the investment and management costs, has occurred. This evidence has induced the development of assessment tools to clarify the relationships among resources, outputs, and outcomes of technological innovations. This analysis was developed in order to examine the use of a telematic system for reporting remotely transmitted cardiotocographic traces, specifically (1) its impact on the health organization and on the appropriateness of the care setting used and (2) the efficiency of its adoption in a regional network. **MATERIALS AND METHODS:** We adopted a case-control study on patients' medical records during the first 4 months of 2009, 2010, and 2011 and a cost analysis of resources used for the creation of a computerized telecardiotocography network connecting eight peripheral areas to the operations center. **RESULTS:** The case-control study showed a reduction in the average hospital stay days for high-risk patients (1.32) and for low-risk patient (1.7) with a total of cost savings of euro89,628 for high-risk patients and euro170,170 for low-risk patients. The cost savings of the regional network was euro20,769.04. **CONCLUSIONS:** The adoption of a remote transmission system of cardiotocography provided a managerial and economic advantage in the reduction of inappropriate admissions for prepartum symptoms and an improvement in the admission indicators (hospital stay days).

Talboom-Kamp, E. P., et al. (2016). "e-Vita: design of an innovative approach to COPD disease management in primary care through eHealth application." *BMC Pulm Med* **16**(1): 121.

BACKGROUND: COPD is a highly complex disease to manage as patients show great variation in symptoms and limitations in daily life. In the last decade self-management support of COPD has been introduced as an effective method to improve quality and efficiency of care, and to reduce healthcare costs. Despite the urge to change the organisation of health care and the potential of eHealth to support this, large-scale implementation in daily practice remains behind, especially in the Netherlands. **METHODS/DESIGN:** We designed a multilevel study, called e-Vita, to investigate different organisational implementation methods of a self-management web portal to support and empower patients with COPD in three different primary care settings. Using a parallel cohort design, the clinical effects of the web portal will be assessed using an interrupted times series (ITS) study design and measured according to changes in health status with the Clinical COPD Questionnaire (CCQ). The different implementations and net benefits of self-management through eHealth on clinical outcomes will be evaluated from human, organisational, and technical perspectives. **DISCUSSION:** To our knowledge this is the first study to combine different study designs that enable simultaneous investigation of clinical effects, as well as effects of different organisational implementation methods whilst controlling for confounding effects of the organisational characteristics. We hypothesize that an implementation with higher levels of personal assistance, and integrated in an existing care program will result in increased use of and satisfaction with the platform, thereby increasing health status and diminishing exacerbation and hospitalisation. **TRIAL REGISTRATION:** NTR4098 (31-07-2013).

Taylor, P., et al. (2001). "Evaluating a telemedicine system to assist in the management of dermatology referrals." *British Journal of Dermatology*(144): 328-333, 328 tabl.

Thijssing, L., et al. (2013). "Telepulmonology in the Netherlands: effect on quality and efficiency of care." *Stud Health Technol Inform* **192**: 1087.

In telepulmonology a general practitioner (GP) digitally consults a local pulmonologist. This study assessed the effect of telepulmonology on quality and efficiency of care. Efficiency of care was measured as the percentage of prevented physical referrals. Quality of care was measured using 5 indicators. Thirty-one percent of the TelePulmonology Consultations (TPCs) were sent to prevent a physical referral, the other TPCs were sent to ask for advice of the pulmonologist. Sixty-eight percent of the TPCs sent to prevent a physical referral indeed prevented a physical referral. Eighteen percent

of the TPCs sent for advice resulted in a physical referral on advice of the pulmonologist. These patients would not have been referred without telepulmonology.

Thomas, C. L., et al. (2014). "Effectiveness and cost-effectiveness of a telehealth intervention to support the management of long-term conditions: study protocol for two linked randomized controlled trials." *Trials* **15**: 36.

BACKGROUND: As the population ages, more people are suffering from long-term health conditions (LTCs). Health services around the world are exploring new ways of supporting people with LTCs and there is great interest in the use of telehealth: technologies such as the Internet, telephone and home self-monitoring. **METHODS/DESIGN:** This study aims to evaluate the effectiveness and cost-effectiveness of a telehealth intervention delivered by NHS Direct to support patients with LTCs. Two randomized controlled trials will be conducted in parallel, recruiting patients with two exemplar LTCs: depression or raised cardiovascular disease (CVD) risk. A total of 1,200 patients will be recruited from approximately 42 general practices near Bristol, Sheffield and Southampton, UK. Participants will be randomly allocated to either usual care (control group) or usual care plus the NHS Direct Healthlines Service (intervention group). The intervention is based on a conceptual model incorporating promotion of self-management, optimisation of treatment, coordination of care and engagement of patients and general practitioners. Participants will be provided with tailored help, combining telephone advice from health information advisors with support to use a range of online resources. Participants will access the service for 12 months. Outcomes will be collected at baseline, four, eight and 12 months for the depression trial and baseline, six and 12 months for the CVD risk trial. The primary outcome will be the proportion of patients responding to treatment, defined in the depression trial as a PHQ-9 score <10 and an absolute reduction in PHQ-9 ≥ 5 after 4 months, and in the CVD risk trial as maintenance or reduction of 10-year CVD risk after 12 months. The study will also assess whether the intervention is cost-effective from the perspective of the NHS and personal social services. An embedded qualitative interview study will explore healthcare professionals' and patients' views of the intervention. **DISCUSSION:** This study evaluates a complex telehealth intervention which combines evidence-based components and is delivered by an established healthcare organisation. The study will also analyse health economic information. In doing so, the study hopes to address some of the limitations of previous research by demonstrating the effectiveness and cost-effectiveness of a real world telehealth intervention. **TRIAL REGISTRATION:** Current Controlled Trials: Depression trial ISRCTN14172341 and cardiovascular disease risk trial ISRCTN27508731.

Turner, C. (2015). "Reducing costs and avoiding hospital admissions: can mobile working help?" *Br J Community Nurs* **20**(5): 245-246, 248-249.

The UK has an increased length of hospital stay in comparison with other European countries, and the need for further investment in community services is required if patients are to truly receive care closer to home. The increase in hospital admissions over the last few years may be attributed to the ageing UK population, as well as poor management of long-term conditions. This may be due to variations in the service provision and availability of case managers and community matrons. The poor working relationships and fragmentation of health and social care services remain a significant issue, despite renewed calls to improve integrated working, which is considered fundamental to achieving a reduction in avoidable hospital admissions. Mobile working was introduced in the NHS to help reform community health-care practice and improve continuity of care. Among other things, it provides clinicians with access to electronic patient records in real time, thus helping to reduce delays in treatment. However, we have to bear in mind that a number of factors could hinder the reduction in hospital admissions.

Udsen, F. W., et al. (2014). "Effectiveness and cost-effectiveness of telehealthcare for chronic obstructive pulmonary disease: study protocol for a cluster randomized controlled trial." *Trials* **15**: 178.

BACKGROUND: Several feasibility studies show promising results of telehealthcare on health outcomes and health-related quality of life for patients suffering from chronic obstructive pulmonary disease, and some of these studies show that telehealthcare may even lower healthcare costs. However, the only large-scale trial we have so far - the Whole System Demonstrator Project in England - has raised doubts about these results since it conclude that telehealthcare as a supplement to usual

care is not likely to be cost-effective compared with usual care alone. METHODS/DESIGN: The present study is known as 'TeleCare North' in Denmark. It seeks to address these doubts by implementing a large-scale, pragmatic, cluster-randomized trial with nested economic evaluation. The purpose of the study is to assess the effectiveness and the cost-effectiveness of a telehealth solution for patients suffering from chronic obstructive pulmonary disease compared to usual practice. General practitioners will be responsible for recruiting eligible participants (1,200 participants are expected) for the trial in the geographical area of the North Denmark Region. Twenty-six municipality districts in the region define the randomization clusters. The primary outcomes are changes in health-related quality of life, and the incremental cost-effectiveness ratio measured from baseline to follow-up at 12 months. Secondary outcomes are changes in mortality and physiological indicators (diastolic and systolic blood pressure, pulse, oxygen saturation, and weight). DISCUSSION: There has been a call for large-scale clinical trials with rigorous cost-effectiveness assessments in telehealthcare research. This study is meant to improve the international evidence base for the effectiveness and cost-effectiveness of telehealthcare to patients suffering from chronic obstructive pulmonary disease by implementing a large-scale pragmatic cluster-randomized clinical trial. TRIAL REGISTRATION: Clinicaltrials.gov, <http://NCT01984840>, November 14, 2013.

van den Berg, N., et al. (2015). "[The integration of telemedicine concepts in the regional care of rural areas: Possibilities, limitations, perspectives]." Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz **58**(4-5): 367-373.

In rural areas with a low population density and (imminent) gaps in regional health care, telemedicine concepts can be a promising option in supporting the supply of medical care. Telemedicine connections can be established between different health care providers (e.g., hospitals) or directly between health care providers and patients. Different scenarios for the implementation of telemedicine have been developed, from the monitoring of chronically ill patients to the support of acute care. Examples of frequently applied telemedicine concepts are teleradiology, telemedicine stroke networks, and the telemedicine monitoring of patients with heart failure. The development of concepts for other indications and patient groups is apparently difficult in Germany; one reason could be that research institutions are involved in only a small number of projects. However, the participation of research institutes would be of importance in creating more scientific evidence. The development of appropriate evaluation designs for analyzing the effectiveness of telemedicine concepts and economic effects is an important task and challenge for the future. Mandatory evaluation criteria should be developed to provide a basis for the translation of positively evaluated telemedicine concepts into routine care.

van der Voort, P. H., et al. (2014). "[Telemedicine in Dutch intensive care]." Ned Tijdschr Geneesk **158**: A8493.

Telemedicine is a way to provide care over a distance. In teleconsultations the intensivist gives advice to his or her colleagues in a remote centre. In tele-intensive care (tele-IC) the intensivist makes medical decisions for the remote patients and is fully responsible for the treatment of the intensive care patients in a remote centre. In the USA, 11% of ICU patients are currently being treated by tele-intensivists. Telemedicine has the potential of increasing the continuity of care and of providing expertise to patients in small ICUs where and when needed. In a pilot setting, the OLVG hospital has implemented a tele-ICU for the 3-bed ICU in the MC Zuiderzee hospital. The tele-ICU was set up on 3 December 2010. Although the tele-ICU performed sufficiently, several aspects, such as cost analysis, need clarification before the system can be widely implemented in the Netherlands.

van Limburg, M., et al. (2011). "Why business modeling is crucial in the development of eHealth technologies." J Med Internet Res **13**(4): e124.

The impact and uptake of information and communication technologies that support health care are rather low. Current frameworks for eHealth development suffer from a lack of fitting infrastructures, inability to find funding, complications with scalability, and uncertainties regarding effectiveness and sustainability. These issues can be addressed by defining a better implementation strategy early in the development of eHealth technologies. A business model, and thus business modeling, help to determine such an implementation strategy by involving all important stakeholders in a value-driven

dialogue on what the technology should accomplish. This idea also seems promising to eHealth, as it can contribute to the whole development of eHealth technology. We therefore suggest that business modeling can be used as an effective approach to supporting holistic development of eHealth technologies. The contribution of business modeling is elaborated in this paper through a literature review that covers the latest business model research, concepts from the latest eHealth and persuasive technology research, evaluation and insights from our prior eHealth research, as well as the review conducted in the first paper of this series. Business modeling focuses on generating a collaborative effort of value cocreation in which all stakeholders reflect on the value needs of the others. The resulting business model acts as the basis for implementation. The development of eHealth technology should focus more on the context by emphasizing what this technology should contribute in practice to the needs of all involved stakeholders. Incorporating the idea of business modeling helps to cocreate and formulate a set of critical success factors that will influence the sustainability and effectiveness of eHealth technology.

Varney, J. E., et al. (2016). "The cost-effectiveness of hospital-based telephone coaching for people with type 2 diabetes: a 10 year modelling analysis." *BMC Health Serv Res* **16**(1): 521.

BACKGROUND: Type 2 diabetes (T2DM) is a burdensome condition for individuals to live with and an increasingly costly condition for health services to treat. Cost-effective treatment strategies are required to delay the onset and slow the progression of diabetes related complications. The Diabetes Telephone Coaching Study (DTCS) demonstrated that telephone coaching is an intervention that may improve the risk factor status and diabetes management practices of people with T2DM. Measuring the cost effectiveness of this intervention is important to inform funding decisions that may facilitate the translation of this research into clinical practice. The purpose of this study is to assess the cost-effectiveness of telephone coaching, compared to usual diabetes care, in participants with poorly controlled T2DM. **METHODS:** A cost utility analysis was undertaken using the United Kingdom Prospective Diabetes Study (UKPDS) Outcomes Model to extrapolate outcomes collected at 6 months in the DTCS over a 10 year time horizon. The intervention's impact on life expectancy, quality-adjusted life expectancy (QALE) and costs was estimated. Costs were reported from a health system perspective. A 5 % discount rate was applied to all future costs and effects. One-way sensitivity analyses were conducted to reflect uncertainty surrounding key input parameters. **RESULTS:** The intervention dominated the control condition in the base-case analysis, contributing to cost savings of \$3327 per participant, along with non-significant improvements in QALE (0.2 QALE) and life expectancy (0.3 years). **CONCLUSIONS:** The cost of delivering the telephone coaching intervention continuously, for 10 years, was fully recovered through cost savings and a trend towards net health benefits. Findings of cost savings and net health benefits are rare and should prove attractive to decision makers who will determine whether this intervention is implemented into clinical practice. **TRIAL REGISTRATION:** ACTRN12609000075280.

Vegni, E., et al. (1999). "The video recording of medical visits for the study of physician-patient rapport in general medicine. An experimental experience in Italy." *Recenti Progressi in Medicina* **90**(1): 9-12.

Voss, H., et al. (2005). "The Baltic Health Network - Taking Secure, Internet-based Healthcare Networks to the Next Level." *Stud Health Technol Inform* **116**: 421-426.

Internet-based health care networks are a step forward compared to first generation health care networks, which has been limited to pushing text-based messages between different systems. An Internet-based network can also "pull" data - and not only text but any digital data - for instance images and video sequences. The Internet-based networks can more effectively fulfil the vision of access to relevant data regardless of time and location. Although far from identical, the health delivery systems of Denmark, Norway and Sweden are similar. They also share a shortage of specialized health personnel - not least radiologists and in some regions obstetricians. Furthermore, over the past ten years they have implemented an IT-strategy to increase efficiency in the delivery of healthcare services. Part of this strategy has been to build three national networks on top of the existing regional, secure and Internet-based healthcare networks. These national networks connect not only all hospitals in the three countries, but also a majority of the other stakeholders in the healthcare sector (GPs, private specialists, laboratories, homecare services etc.). The organizations behind the three

networks are now working on creating a trans-national network, the Baltic Health Network (BHN), which will be one of the outcomes of the Baltic eHealth project and will not only connect the three national networks but also add two hospital networks from Lithuania and Estonia. The BHN is expected to be operational by June 2005. One of major advantages of the BHN is that the many rural hospitals of the Baltic Sea Area with a few mouse clicks can reach a specialist for second opinion in any of the approximately 200 hospitals connected to the network. For instance the midwives in the rural areas of Vasterbottan County, Sweden, are awaiting the establishment of BHN to get access to second opinions from specialists at National Center for Foetal Medicine at the University Hospital of Trondheim, Norway. The BHN will remove a very important technical barrier for collaboration between health professionals and the Baltic eHealth project hopes that this and other project initiatives will facilitate the large-scale usage of second opinion from available health care experts regardless of institutional, regional and even national borders. This will lift the quality of service to patients in the Baltic Sea Region - especially in the rural areas where highly specialized health professionals tend to be geographically far away.

Wiertsema, S. H., et al. (2017). "Evaluation of a new Transmural Trauma Care Model (TTCM) for the rehabilitation of trauma patients: a study protocol." *BMC Health Serv Res* **17**(1): 99.

BACKGROUND: Improved organization of trauma care in the acute phase has reduced mortality of trauma patients. However, there has been limited attention for the optimal organization of post-clinical rehabilitation of trauma patients. Therefore we developed a Transmural Trauma Care Model (TTCM). This TTCM consists of four equally important components: 1) intake and follow up consultations by a multidisciplinary team consisting of trauma surgeon and hospital based trauma physical therapist, 2) coordination and individual goal setting for each patient by this team, 3) primary care physical therapy by specialized physical therapists organized in a network and 4) E-health support for transmural communication and treatment according to protocols. The aim of the current study is to assess the cost-effectiveness of the TTCM. **METHODS:** Patients will be recruited from the outpatient clinic for trauma patients of the VU University Medical Center (VUmc) if they have at least one fracture and were discharged home. A controlled-before-and-after study design will be used to compare the TTCM with regular care. Measurements will take place after the first outpatient clinical visit and after 3, 6 and 9 months. Prior to the implementation of the TTCM, 200 patients (50 patients per time point) will be included in the control group. After implementation 100 patients will be included in the intervention group and prospectively followed. Between-group comparisons will be made separately for each time point. In addition, the recovery pattern of patients in the intervention group will be studied using longitudinal data analysis methods. Effectiveness will be evaluated in terms of health-related quality of life (HR-QOL), pain, functional status, patient satisfaction, and perceived recovery. Cost-effectiveness will be assessed from a societal perspective, meaning that all costs related to the TTCM will be taken into account including intervention, health care, absenteeism, presenteeism and unpaid productivity. Additionally, a process evaluation will be performed to explore the extent to which the TTCM was implemented as intended, and to identify possible facilitators and barriers associated with its implementation. **DISCUSSION:** This planned research will give insight into the feasibility of the TTCM model in clinical practice and will give a first indication of the cost-effectiveness of the TTCM and help us to further develop post-clinical trauma care. **TRIAL REGISTRATION:** Trial registration number: NTR5474 . The Netherlands National Trial Register (NTR). Registered 12 October 2015.

Wild, S., et al. (2013). "The impact of supported telemetric monitoring in people with type 2 diabetes: study protocol for a randomised controlled trial." *Trials* **14**: 198.

BACKGROUND: Diabetes prevalence is increasing and current methods of management are unsustainable. Effective approaches to supporting self-management are required. The aim of this randomized controlled trial is to establish whether supported telemetric monitoring of glycemic control and blood pressure results in reductions in glycosylated hemoglobin (HbA1c; the primary outcome of a measure of long-term glycemic control) and secondary outcomes of blood pressure and weight among people with poorly controlled diabetes compared to a control group receiving usual care. **METHODS/DESIGN:** Design: multi-center, randomized controlled trial with embedded qualitative study. Setting: primary care in Lothian, Kent, Glasgow and Borders regions in the UK. Participants:

people with type 2 diabetes and confirmed HbA1c > 7.5% (58 mmol/mol). Intervention/comparison: randomization to intervention or control groups will be performed by the Edinburgh Clinical Trials Unit. Participants in the intervention group will be shown how to use blood glucose and blood pressure monitors and weighing scales which use Bluetooth wireless technology to transmit readings via modem to a remote server. These participants will be asked to provide at least twice weekly measurements of morning and evening blood glucose and weekly measurements of weight and blood pressure. Measurements will be checked at least weekly by practice nurses who will contact the patients to adjust therapy according to guidelines and reinforce lifestyle advice. Participants in the control group will receive usual care. All participants will receive an individual education session. Follow-up: measurements will be performed at practices 9 months after randomization by research nurses blinded to allocation. The primary outcome measure is HbA1c and secondary outcomes measure are daytime systolic and diastolic blood pressure, weight and cost per quality-adjusted life year. Analysis: intention-to-treat analyses will be performed. The sample size of 320 participants allows for 20% drop-out and has 80% power at 5% significance to detect a 0.5% absolute (6 mmol/mol) fall in HbA1c in the intervention group. The qualitative study will explore the experiences of patients and professionals using the intervention. TRIAL REGISTRATION: Trial registration number ISRCTN71674628.

Zamora, B. (2012). Strategic Intelligence Monitor on Personal Health Systems, Phase 2. Impact Assessment Final Report. Luxembourg Publications Office of the European Union: 44, tabl., fig.

<ftp://ftp.jrc.es/pub/EURdoc/JRC71183.pdf>

This report aims to assess the economic impacts of deployment of eHealth technologies in the EU through projections of Member State eHealth expenditures (i.e. on telehealth and telecare, savings in hospitalisation costs, decrease in mortality, and other health care costs).

Zanaboni, P., et al. (2016). "Long-term integrated telerehabilitation of COPD Patients: a multicentre randomised controlled trial (iTrain)." *BMC Pulm Med* **16**(1): 126.

BACKGROUND: Pulmonary rehabilitation (PR) is an effective intervention for the management of people with chronic obstructive pulmonary disease (COPD). However, available resources are often limited, and many patients bear with poor availability of programmes. Sustaining PR benefits and regular exercise over the long term is difficult without any exercise maintenance strategy. In contrast to traditional centre-based PR programmes, telerehabilitation may promote more effective integration of exercise routines into daily life over the longer term and broaden its applicability and availability. A few studies showed promising results for telerehabilitation, but mostly with short-term interventions. The aim of this study is to compare long-term telerehabilitation with unsupervised exercise training at home and with standard care. METHODS/DESIGN: An international multicentre randomised controlled trial conducted across sites in three countries will recruit 120 patients with COPD. Participants will be randomly assigned to telerehabilitation, treadmill and control, and followed up for 2 years. The telerehabilitation intervention consists of individualised exercise training at home on a treadmill, telemonitoring by a physiotherapist via videoconferencing using a tablet computer, and self-management via a customised website. Patients in the treadmill arm are provided with a treadmill only to perform unsupervised exercise training at home. Patients in the control arm are offered standard care. The primary outcome is the combined number of hospitalisations and emergency department presentations. Secondary outcomes include changes in health status, quality of life, anxiety and depression, self-efficacy, subjective impression of change, physical performance, level of physical activity, and personal experiences in telerehabilitation. DISCUSSION: This trial will provide evidence on whether long-term telerehabilitation represents a cost-effective strategy for the follow-up of patients with COPD. The delivery of telerehabilitation services will also broaden the availability of PR and maintenance strategies, especially to those living in remote areas and with no access to centre-based exercise programmes. TRIAL REGISTRATION: ClinicalTrials.gov: NCT02258646.

Zanaboni, P., et al. (2013). "Long-term telerehabilitation of COPD patients in their homes: interim results from a pilot study in Northern Norway." *J Telemed Telecare* **19**(7): 425-429.

We investigated the feasibility of a long-term telerehabilitation service for COPD patients comprising exercise training at home, telemonitoring and education/self-management. The service was offered as a 2-year follow-up programme by a physiotherapist. Equipment included a treadmill, a pulse oximeter and a tablet computer. Participants had weekly videoconference sessions with the physiotherapist. A website was used to access a training programme and to fill in a daily diary and a training diary. Ten patients with moderate or severe COPD participated in a pilot study in Northern Norway. After more than one year, all participants were still participating actively and no drop-outs had occurred. On average, there were 2.0 training sessions/week, 3.3 measurements/week registered via the website and 0.5 videoconference contacts/week. There was a reduction of 27% in the COPD-related hospital costs. Feedback from the participants was very positive. Long-term telerehabilitation of COPD patients at home is feasible and interim results suggest that it reduces healthcare utilization.

AUTRES ETUDES : AUSTRALIE, CANADA, ETATS-UNIS

Abbott, D. E., et al. (2017). "Socioeconomic disparities, financial toxicity, and opportunities for enhanced system efficiencies for patients with cancer." *J Surg Oncol* **115**(3): 250-256.

Cancer care continues to stress the US healthcare system with increases in life expectancy, cancer prevalence, and survivors' complex needs. These challenges are compounded by socioeconomic, racial, and cultural disparities that are associated with poor clinical outcomes. One innovative and resource-wise strategy to address this demand on the system is expanded use of telehealth. This paradigm has the potential to decrease healthcare and patient out-of-pocket costs and improve patient adherence to recommended treatment and/or surveillance.

Achey, M. A., et al. (2014). "Virtual house calls for Parkinson disease (Connect.Parkinson): study protocol for a randomized, controlled trial." *Trials* **15**: 465.

BACKGROUND: Interest in improving care for the growing number of individuals with chronic conditions is rising. However, access to care is limited by distance, disability, and distribution of doctors. Small-scale studies in Parkinson disease, a prototypical chronic condition, have suggested that delivering care using video house calls is feasible, offers similar clinical outcomes to in-person care, and reduces travel burden. **METHODS/DESIGN:** We are conducting a randomized comparative effectiveness study (Connect.Parkinson) comparing usual care in the community to usual care augmented by virtual house calls with a Parkinson disease specialist. Recruitment is completed centrally using online advertisements and emails and by contacting physicians, support groups, and allied health professionals. Efforts target areas with a high proportion of individuals not receiving care from neurologists. Approximately 200 individuals with Parkinson disease and their care partners will be enrolled at 20 centers throughout the United States and followed for one year. Participants receive educational materials, then are randomized in a 1:1 ratio to continue their usual care (control arm) or usual care and specialty care delivered virtually (intervention arm). Care partners are surveyed about their time and travel burden and their perceived caregiver burden. Participants are evaluated via electronic survey forms and videoconferencing with a blinded independent rater at baseline and at 12 months. All study activities are completed remotely. The primary outcomes are: (1) feasibility, as measured by the proportion of visits completed, and (2) quality of life, as measured by the 39-item Parkinson's Disease Questionnaire. Secondary outcomes include measures of clinical benefit, quality of care, time and travel burden, and caregiver burden. **DISCUSSION:** Connect.Parkinson will evaluate the feasibility and effectiveness of using technology to deliver care into the homes of individuals with Parkinson disease. The trial may serve as a model for increasing access and delivering patient-centered care at home for individuals with chronic conditions. **TRIAL REGISTRATION:** This trial was registered on clinicaltrials.gov on January 8, 2014 [NCT02038959].

Adambounou, K., et al. (2014). "A low-cost tele-imaging platform for developing countries." *Front Public Health* **2**: 135.

PURPOSE: To design a "low-cost" tele-imaging method allowing real-time tele-ultrasound expertise, delayed tele-ultrasound diagnosis, and tele-radiology between remote peripheral hospitals and

clinics (patient centers) and university hospital centers (expert center). MATERIALS AND METHODS: A system of communication via internet (IP camera and remote access software) enabling transfer of ultrasound videos and images between two centers allows a real-time tele-radiology expertise in the presence of a junior sonographer or radiologist at the patient center. In the absence of a sonographer or radiologist at the patient center, a 3D reconstruction program allows a delayed tele-ultrasound diagnosis with images acquired by a lay operator (e.g., midwife, nurse, technician). The system was tested both with high and low bandwidth. The system can further accommodate non-ultrasound tele-radiology (conventional radiography, mammography, and computer tomography for example). The system was tested on 50 patients between CHR Tsevie in Togo (40 km from Lome-Togo and 4500 km from Tours-France) and CHU Campus at Lome and CHU Trousseau in Tours. RESULTS: A real-time tele-expertise was successfully performed with a delay of approximately 1.5 s with an internet bandwidth of around 1 Mbps (IP Camera) and 512 kbps (remote access software). A delayed tele-ultrasound diagnosis was also performed with satisfactory results. The transmission of radiological images from the patient center to the expert center was of adequate quality. Delayed tele-ultrasound and tele-radiology was possible even in the presence of a low-bandwidth internet connection. CONCLUSION: This tele-imaging method, requiring nothing by readily available and inexpensive technology and equipment, offers a major opportunity for telemedicine in developing countries.

Adamson, P. B., et al. (2016). "Pulmonary Artery Pressure-Guided Heart Failure Management Reduces 30-Day Readmissions." *Circ Heart Fail* **9**(6).

BACKGROUND: This study examines the impact of pulmonary artery pressure-guided heart failure (HF) care on 30-day readmissions in Medicare-eligible patients. METHODS AND RESULTS: The CardioMicroelectromechanical system (CardioMEMS) Heart Sensor Allows Monitoring of Pressures to Improve Outcomes in New York Heart Association Class III Heart Failure Patients (CHAMPION) Trial included 550 patients implanted with a permanent MEMS-based pressure sensor in the pulmonary artery. Subjects were randomized to a treatment group (uploaded pressures were made available to investigators) or a control group (uploaded pressures were not made available to investigators). This analysis focuses on the 245 Medicare-eligible subjects for whom compliance with daily transmissions was 93% compared with 88% for the overall population. Medications were changed more often in the treatment group using pressure information compared with the control group using symptoms and daily weights alone. During the 515 days follow-up after implant, the overall rate of HF hospitalizations was 49% lower in the treatment group (60 HF hospitalizations, 0.34 events/patient-year) compared with control (117 HF hospitalizations, 0.67 events/patient-year; hazard ratio 0.51, 95% confidence interval 0.37-0.70; $P < 0.0001$). Of the 177 HF hospitalizations, 155 qualified as an index HF hospitalization. All-cause 30-day readmissions were 58% lower in the treatment group (0.07 events/patient-year) compared with 0.18 events/patient-year in the control group (hazard ratio 0.42, 95% confidence interval 0.22-0.80; $P = 0.0080$). CONCLUSIONS: Pulmonary artery pressure-guided HF management in Medicare-eligible patients led to a 49% reduction in total HF hospitalizations and a 58% reduction in all-cause 30-day readmissions. CLINICAL TRIAL REGISTRATION: <http://www.clinicaltrials.gov>. Unique identifier: NCT00531661.

Adler-Milstein, J., et al. (2014). "Telehealth among US hospitals: several factors, including state reimbursement and licensure policies, influence adoption." *Health Aff (Millwood)* **33**(2): 207-215.

Telehealth is widely believed to hold great potential to improve access to, and increase the value of, health care. Gaining a better understanding of why some hospitals adopt telehealth technologies while others do not is critically important. We examined factors associated with telehealth adoption among US hospitals. Data from the Information Technology Supplement to the American Hospital Association's 2012 annual survey of acute care hospitals show that 42 percent of US hospitals have telehealth capabilities. Hospitals more likely to have telehealth capabilities are teaching hospitals, those equipped with additional advanced medical technology, those that are members of a larger system, and those that are nonprofit institutions. Rates of hospital telehealth adoption by state vary substantially and are associated with differences in state policy. Policies that promote private payer reimbursement for telehealth are associated with greater likelihood of telehealth adoption, while policies that require out-of-state providers to have a special license to provide telehealth services

reduce the likelihood of adoption. Our findings suggest steps that policy makers can take to achieve greater adoption of telehealth by hospitals.

Adler-Milstein, J., et al. (2013). "The impact of electronic health records on ambulatory costs among Medicaid beneficiaries." Medicare Medicaid Res Rev **3**(2).

BACKGROUND: Broad adoption of electronic health records (EHRs) is a potential strategy for curbing healthcare cost growth, which is particularly vital for Medicaid. Despite limited evidence for EHR-related cost savings, the 2009 HITECH Act included incentives for providers to become meaningful users of EHRs. We evaluated a large Massachusetts EHR pilot to obtain early insight into the potential for the national strategy to reduce short-run healthcare costs in the Medicaid population. **METHODS:** We calculated monthly ambulatory cost and visit measures from Medicaid claims data for beneficiaries receiving the majority of their care in the three Massachusetts eHealth Collaborative (MAeHC) pilot communities or in six matched control communities. Using a difference-in-differences of slope analysis, we assessed whether cost and visit trajectories differed in the pre-implementation period compared to the post-implementation period for intervention and control community members. **RESULTS:** We found evidence that EHR adoption impacted ambulatory medical cost in two of the three communities, but the effects were in opposite directions. Ambulatory medical costs increased more slowly in one intervention compared to its control communities in the pre-to-post period (difference-in-differences=-1.98%, $p<0.001$; PMPM savings of \$41.60). In contrast, for a second pilot community, ambulatory medical cost increased more slowly in the control communities (difference-in-differences=2.56%, $p=0.005$; PMPM increase of \$43.34). **CONCLUSIONS:** As a stand-alone approach, adoption of commercially-available EHRs in community practices did not consistently impact Medicaid costs in the short-run. This suggests that future meaningful use criteria may need to specifically target cost savings and coordinate with payment reform efforts.

Agrawal, A., et al. (2011). "Systematic survey of discrepancy rates in an international teleradiology service." Emerg Radiol **18**(1): 23-29.

International teleradiology services (ITS) to the United States are based on the principle of deploying American board-certified radiologists across global time zones to optimally distribute the workload. While errors may be reduced by circumventing the traditional night call, there is limited evidence on the actual error rates of teleradiology groups. We have a comprehensive quality assurance (QA) process in our practice, which includes a review of discrepancies between preliminary reports and the final reports by the on-site radiologists. We analyzed the discrepancy QA data to determine the error rates. Archived QA data for 126,449 cases over a period of 1 year (2008) were analyzed for the discrepancy rate, nature of errors, and possible contributory factors. The scores ranged from 0 (no error) to 5 (clinically significant in the acute setting) based on the level of clinical significance. A novel modified Lorenz plot was used to estimate the degree of underreporting and to estimate the true error rate. An internal review of 200 cases was performed to validate the findings. Of the total, there was a total of 227 confirmed errors (0.18%, 95% CI, 0.16 to 0.20). Of these, the majority were levels 2 and 3 (minor error and error of long-term significance but not in the acute setting). Even after correction for underreporting, error rates were less than 1% for clinically significant errors. ITS is associated with very low rates of clinically significant errors. Due to limited feedback, particularly for minor errors, an internal review is important.

Akematsu, Y., et al. (2013). "Empirical analysis of the long-term effects of telecare use in Nishi-aizu Town, Fukushima Prefecture, Japan." Technol Health Care **21**(2): 173-182.

This paper examined the long-term effects of the use of telecare (e-Health) on the residents of Nishi-aizu Town, Fukushima, Japan, between 2002 and 2010. We compared medical expenditure and days of treatment between telecare users (treatment group) and non-users (control group) based on receipt data obtained from the National Health Insurance, which is operated by the government. In previous studies, we used receipt data obtained for the years 2002 to 2006; this study expands the analysis period four more years with respect to respondents who were included in previous analyses. Ninety users and 118 non-users were included in both analyses. Using rigorous statistical methods, including system generalized method of moments (GMM), this paper demonstrates that telecare users

require fewer days of treatment and lower medical expenditure than non-users with respect to the chronic diseases of stroke, hypertension, heart failure, and diabetes. To date, there have been no publications examining the long-term economic effects of the use of telemedicine, so the current study presents a new facet to the research in this field.

Akematsu, Y. et Tsuji, M. (2013). "Relation between telecare implementation and number of treatment days in a Japanese town." *J Telemed Telecare* **19**(1): 36-39.

We analysed data on the medical expenditure of 199 telecare users in Nishi-aizu Town, Fukushima Prefecture, which has one of the oldest ongoing telecare implementations in Japan. As controls, 450 out of 3528 non-users residents covered by National Health Insurance were randomly selected in the same age and sex ratios as the telecare users. An analysis by the Generalized Method of Moments (GMM) was conducted in order to examine causality, i.e. that telecare use reduces the number of treatment days. To reduce sample selection bias, the presence of chronic diseases, age and education were added as control variables in the estimation. The results show that the treatment days of those who had chronic diseases were greater than those who did not have chronic diseases by 8.7 days per year ($P < 0.10$), and they were increased by 5.6 days ($P < 0.01$) according to their age. Finally, telecare use decreased treatment days by 3.1 days ($P < 0.05$).

Akiyama, M. et Abraham, C. (2017). "Comparative cost-benefit analysis of tele-homecare for community-dwelling elderly in Japan: Non-Government versus Government Supported Funding Models." *Int J Med Inform* **104**: 1-9.

OBJECTIVE: Tele-homecare is gaining prominence as a viable care alternative, as evidenced by the increase in financial support from international governments to fund initiatives in their respective countries. The primary reason for the funding is to support efforts to reduce lags and increase capacity in access to care as well as to promote preventive measures that can avert costly emergent issues from arising. These efforts are especially important to super-aged and aging societies such as in Japan, many European countries, and the United States (US). However, to date and to our knowledge, a direct comparison of non-government vs. government-supported funding models for tele-homecare is particularly lacking in Japan. The aim of this study is to compare these operational models (i.e., non-government vs. government-supported funding) from a cost-benefit perspective. This simulation study applies to a Japanese hypothetical cohort with implications for other super-aged and aging societies abroad. **METHODS:** We performed a cost-benefit analysis (CBA) on two operational models for enabling tele-homecare for elderly community-dwelling cohorts based on a decision tree model, which we created with parameters from published literature. The two models examined are (a) Model 1-non-government-supported funding that includes monthly fixed charges paid by users for a portion of the operating costs, and (b) Model 2-government-supported funding that includes startup and installation costs only (i.e., no operating costs) and no monthly user charges. We performed base case cost-benefit analysis and probabilistic cost-benefit analysis with a Monte Carlo simulation. We calculated net benefit and benefit-to-cost ratios (BCRs) from the societal perspective with a five-year time horizon applying a 3% discount rate for both cost and benefit values. The cost of tele-homecare included (a) the startup system expense, averaged over a five-year depreciation period, and (b) operation expenses (i.e., labor and non-labor) per user per year. The benefit of tele-homecare was measured by annual willingness to pay (WTP) for tele-homecare by a user and medical expenditures avoided. Both costs and benefits were inflated using the relevant Japanese consumer price index (CPI) and converted into 2015 US dollars with purchasing power parity (PPP) adjusted. **RESULTS:** Base case net benefits of Model 1 and Model 2 were \$417.00 and \$97.30, respectively. Base case BCR of Model 1 tele-homecare was 1.63, while Model 2 was 1.03. The probabilistic analysis estimated mean (95%CI) for BCRs of Model 1 and Model 2 was 1.84 (1.89, 1.88) and 1.46 (1.43, 1.49), respectively. Sensitivity analysis showed robustness of Model 1 in 7 parameters but Model 2 was sensitive in all key parameters such as initial system cost, device cost, number of users, and medical expenditure saved. Break-even analysis showed that the system cost of Model 2 had to be under \$187,500. **CONCLUSIONS:** Our results for each model collectively showed that tele-homecare in Japan is cost-saving to some extent. However, the government-funded model (i.e., Model 2), which typically requires use of all startup funding to be spent within the first year on system costs, was inferior to the monthly fee model (i.e., Model 1) that did not use the government funding for installation or

continued operations, but rather incorporated a monthly fee from users to support the receipt of services via tele-homecare. While the benefits of Model 1 outweighed the benefits of Model 2, the government-subsidized method employed in Model 2 could be more beneficial in general if some explicit prequalifying estimated metrics are instituted prior to funding. Thus, governments need to require applicants requesting funding to note, at a minimum, (a) estimated costs, (b) the expected number of tele-homecare users, and expected benefits such as (c) WTP by the user, or (d) medical expenditure saved by tele-homecare as a means of financing some of the operational costs.

Akiyama, M. et Yoo, B. K. (2016). "A Systematic Review of the Economic Evaluation of Telemedicine in Japan." *J Prev Med Public Health* **49**(4): 183-196.

OBJECTIVES: There is no systematic review on economic evaluations of telemedicine in Japan, despite over 1000 trials implemented. Our systematic review aims to examine whether Japan's telemedicine is cost-saving or cost-effective, examine the methodological rigorousness of the economic evaluations, and discuss future studies needed to improve telemedicine's financial sustainability. **METHODS:** We searched five databases, including two Japanese databases, to find peer-reviewed articles published between January 1, 2000 and December 31, 2014 in English and Japanese that performed economic evaluations of Japan's telemedicine programs. The methodological rigorousness of the economic analyses was assessed with a well-established checklist. We calculated the benefit-to-cost ratio (BCR) when a reviewed study reported related data but did not report the BCR. All cost values were adjusted to 2014 US dollars. **RESULTS:** Among the 17 articles identified, six studies reported on settings connecting physicians for specialist consultations, and eleven studies on settings connecting healthcare providers and patients at home. There are three cost-benefit analyses and three cost-minimization analyses. The remaining studies measured the benefit of telemedicine only, using medical expenditure saved or users' willingness-to-pay. There was substantial diversity in the methodological rigorousness. Studies on teleradiology and teleradiology indicated a favorable level of economic efficiency. Studies on telehomecare gave mixed results. One cost-benefit analysis on telehomecare indicated a low economic efficiency, partly due to public subsidy rules, e.g., a too short budget period. **CONCLUSIONS:** Overall, telemedicine programs in Japan were indicated to have a favorable level of economic efficiency. However, the scarcity of the economic literature indicates the need for further rigorous economic evaluation studies.

Anderson, W. L. et Wiener, J. M. (2015). "The impact of assistive technologies on formal and informal home care." *Gerontologist* **55**(3): 422-433.

PURPOSE OF THE STUDY: Assistive technologies help people with disabilities compensate for their impairments. This study assessed which of 5 categories of assistive technologies-indoor/outdoor mobility, bed transfer, bathing, toileting, and telephone assistance-were substitutes or complements for human personal assistance by differentiating between total and formal personal assistance service (PAS) hours. **DESIGN AND METHODS:** The study analyzed 2004 National Long-Term Care Survey community-dwelling respondents receiving assistance with activities of daily living. Ordinary least squares (OLS) on total PAS hours was estimated on the entire sample, and logit and OLS models were estimated on the likelihood and hours of formal PAS, respectively. **RESULTS:** Assistive technology for indoor/outdoor mobility, bed transfer, and bathing was found to be substitutes for total PAS, whereas assistive technology for bed transfer and toileting was found to be complements for the use of formal PAS. Telephone assistance was not significant for either total or formal PAS hours. **IMPLICATIONS:** The use of some assistive technologies by older people with disabilities appears to reduce the amount of informal care provided, but not the amount of paid PAS. Thus, this study does not provide support for the hypothesis that the use of assistive technologies will reduce use of paid care and, therefore, spending for long-term care.

Antoniotti, N. M., et al. (2014). "Private payer telehealth reimbursement in the United States." *Telemed J E Health* **20**(6): 539-543.

BACKGROUND: Significant information is available about government-reimbursed telehealth services such as Medicare and Medicaid across the United States. Although currently 20 states mandate reimbursement for telehealth services and some private insurers have voluntarily covered those

services in other states, relatively little is known about telehealth provider experiences with reimbursement from private insurance payers. MATERIALS AND METHODS: To investigate this, the American Telemedicine Association's (ATA's) Telemental Health Special Interest Group (SIG), the Policy Group, and the Business and Finance SIG, with the help of ATA staff, conducted a national private payer reimbursement online survey in 2012 using Survey Monkey (Palo Alto, CA) (www.surveymonkey.com/). RESULTS: Survey responses were received from respondents in 46 of the 50 states. The survey found that telehealth services are being reimbursed by private payers but that progress in reimbursement has been relatively slow compared with earlier surveys. CONCLUSIONS: Key findings from this study were that government payers as well as several major private payers are highly influential in payment policies for telehealth private payers, that private payers have administrative rules regarding telehealth reimbursement that are barriers to services and reimbursement, and that some providers would benefit from being better informed about billing and coding for telehealth services and how to advocate for telehealth services reimbursement.

Armontrout, J., et al. (2016). "Mobile Mental Health: Navigating New Rules and Regulations for Digital Tools." *Curr Psychiatry Rep* **18**(10): 91.

Mobile health (mHealth) apps are becoming much more widely available. As more patients learn about and download apps, clinicians are sure to face more questions about the role these apps can play in treatment. Clinicians thus need to familiarize themselves with the clinical and legal risks that apps may introduce. Regulatory rules and organizations that oversee the safety and efficacy of mHealth apps are currently fragmentary in nature and clinicians should pay special attention to categories of apps which are currently exempt from significant regulation. Uniform HIPAA protection does not apply to personal health data that are shared with apps in many contexts which creates a number of clinically relevant privacy and security concerns. Clinicians should also consider several relatively novel potential adverse clinical outcomes and liability concerns that may be relevant to specific categories of apps, including apps that target (i) medication adherence, (ii) collection of self-reported data, (iii) collection of passive data, and (iv) generation of treatment recommendations for psychotherapeutic and behavioral interventions. Considering these potential pitfalls (and disclosing them to patients as a part of obtaining informed consent) is necessary as clinicians consider incorporating apps into treatment.

Ashwood, J. S., et al. (2017). "Direct-To-Consumer Telehealth May Increase Access To Care But Does Not Decrease Spending." *Health Affairs* **36**(3): 485-491.

<http://content.healthaffairs.org/content/36/3/485.abstract>

The use of direct-to-consumer telehealth, in which a patient has access to a physician via telephone or videoconferencing, is growing rapidly. A key attraction of this type of telehealth for health plans and employers is the potential savings involved in replacing physician office and emergency department visits with less expensive virtual visits. However, increased convenience may tap into unmet demand for health care, and new utilization may increase overall health care spending. We used commercial claims data on over 300,000 patients from three years (2011–13) to explore patterns of utilization and spending for acute respiratory illnesses. We estimated that 12 percent of direct-to-consumer telehealth visits replaced visits to other providers, and 88 percent represented new utilization. Net annual spending on acute respiratory illness increased \$45 per telehealth user. Direct-to-consumer telehealth may increase access by making care more convenient for certain patients, but it may also increase utilization and health care spending.

Ashwood, J. S., et al. (2017). "Direct-To-Consumer Telehealth May Increase Access To Care But Does Not Decrease Spending." *Health Aff (Millwood)* **36**(3): 485-491.

The use of direct-to-consumer telehealth, in which a patient has access to a physician via telephone or videoconferencing, is growing rapidly. A key attraction of this type of telehealth for health plans and employers is the potential savings involved in replacing physician office and emergency department visits with less expensive virtual visits. However, increased convenience may tap into unmet demand for health care, and new utilization may increase overall health care spending. We used commercial claims data on over 300,000 patients from three years (2011-13) to explore patterns of utilization and

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Atkinson, K. M. et al., e. (2017). "Using Mobile Apps to Communicate Vaccination Records: A City-wide Evaluation with A National Immunization App, Maternal Child Registry and Public Health Authorities." *Healthcare Quarterly* 20(3): 41-46.
<http://www.longwoods.com/product/25289>

Medicine is experiencing a paradigm shift, where patients are increasingly involved in the management of their health data. We created a mobile app which permitted parental reporting of immunization status to public health authorities. We describe app use as a proxy for feasibility and acceptability as well as data utility for public health surveillance. The evaluation period ran from April 27, 2015, to April 18, 2017, during which time 2,653 unique children's records were transmitted, containing 36,105 vaccinations. Our findings suggest that mobile immunization reporting is feasible and may be an acceptable complement to existing reporting methods. Measures of data utility suggest that mobile reporting could enable more accurate assessments of vaccine coverage.

Au, D. H., et al. (2015). "Impact of a telehealth and care management program for patients with chronic obstructive pulmonary disease." *Ann Am Thorac Soc* 12(3): 323-331.

RATIONALE: Improving outcomes and health resource use for patients with chronic obstructive pulmonary disease (COPD) care is a priority for health systems. The Health Buddy Program, a content-driven telehealth system coupled with care management, is designed to enhance patient education, self-management, and timely access to care. **OBJECTIVES:** To examine the effects of the Health Buddy Program on resource use among Medicare patients with COPD who participated in a Centers for Medicare and Medicaid Services demonstration project from 2006 to 2010. **METHODS:** Medicare fee-for-service beneficiaries with COPD who enrolled in the intervention at two participating clinics were propensity-score matched to similar patients with COPD identified from a 5% random sample of Medicare patients. Difference-in-difference analyses descriptively compared the program's effect on quarterly healthcare resource use over the 3-year study period compared with baseline. Negative binomial models estimated the association of the program with healthcare resource outcomes adjusting for significant ($P < 0.05$) baseline differences post matching. **MEASUREMENTS AND MAIN RESULTS:** The effect of the Health Buddy Program on quarterly all-cause and respiratory-related hospital admissions, hospital admissions for COPD exacerbations, and all-cause emergency department use was assessed after matching. Intervention ($n=619$) and matched control subjects ($n=619$) had similar baseline characteristics after matching. The Health Buddy Program was associated with 23% lower quarterly all-cause hospital admissions and 40% lower quarterly respiratory-related hospital admissions compared with baseline for intervention beneficiaries versus control subjects. In subgroup analyses, patients who engaged in the intervention during the study period ($n=247$) demonstrated significantly lower quarterly hospital admissions for COPD exacerbations. The Health Buddy Program was not associated with reductions in quarterly emergency department use. Results were robust in analyses that adjusted for significant differences in baseline characteristics after matching. **CONCLUSIONS:** A content-driven telehealth system combined with care management has the potential to improve health outcomes in Medicare beneficiaries with COPD.

Bacigalupe, G. (2011). "Is there a role for social technologies in collaborative healthcare?" *Fam Syst Health* 29(1): 1-14.

The exponential growth, variety, and sophistication of the information communication technologies (ICTs) plus their growing accessibility are transforming how clinical practitioners, patients, and their families can work together. Social technologies are the ICTs tools that augment the ability of people to communicate and collaborate despite obstacles of geography and time. There is still little empirical research on the impact of social technologies in the case of collaborative health. Defining a set of social technologies with potential for developing, sustaining, and strengthening the collaborative

health agenda should prove useful for practitioners and researchers. This paper is based on an extensive review of the literature focusing on emerging technologies and the experience of the author as a consultant to health care professionals learning about social technologies. A note of caution is required: the phenomenon is complex and hard to describe in writing (a medium very different from the technologies themselves). Hardware and software are in continuous development and the iterative adaptation of the emergent social technologies for new forms of virtual communication.

Baker, L. C., et al. (2013). "Effects of care management and telehealth: a longitudinal analysis using medicare data." *J Am Geriatr Soc* **61**(9): 1560-1567.

OBJECTIVES: To evaluate mortality and healthcare utilization effects of an intervention that combined care management and telehealth, targeting individuals with congestive heart failure, chronic obstructive pulmonary disease, or diabetes mellitus. **DESIGN:** Retrospective matched cohort study. **SETTING:** Northwest United States. **PARTICIPANTS:** High-cost Medicare fee-for-service beneficiaries (N = 1,767) enrolled in two Centers for Medicare and Medicaid Services demonstration participating clinics and a propensity-score matched control group. **INTERVENTION:** The Health Buddy Program, which integrates a content-driven telehealth system with care management. **MEASUREMENTS:** Mortality, inpatient admissions, hospital days, and emergency department (ED) visits during the 2-year study period were measured. Cox-proportional hazard models and negative binomial regression models were used to assess the relationship between the intervention and survival and utilization, controlling for demographic and health characteristics that were statistically different between groups after matching. **RESULTS:** At 2 years, participants offered the Health Buddy Program had 15% lower risk-adjusted all-cause mortality (hazard ratio (HR) = 0.85, 95% confidence interval (CI) = 0.74-0.98; P = .03) and had reductions in the number of quarterly inpatient admissions from baseline to the study period that were 18% greater than those of matched controls during this same time period (-0.035 vs -0.003; difference-in-differences = -0.032, 95% CI = -0.054 to -0.010, P = .005). No relationship was found between the Health Buddy Program and ED use or number of hospital days for participants who were hospitalized. The Health Buddy Program was most strongly associated with fewer admissions for individuals with chronic obstructive pulmonary disease and mortality for those with congestive heart failure. **CONCLUSION:** Care management coupled with content-driven telehealth technology has potential to improve health outcomes in high-cost Medicare beneficiaries.

Balzano, J., et al. (2016). "Web-based symptom screening in cystic fibrosis patients: A feasibility study." *J Cyst Fibros* **15**(1): 102-108.

BACKGROUND: Cystic fibrosis (CF) causes high illness burden. Screening may identify patients who could potentially benefit from interventions for symptoms or other sources of distress. We evaluated the feasibility of a web-based system for routine monitoring. **METHODS:** Adult CF patients enrolled in a study of palliative care service delivery completed web-based assessments every 30 days on global distress, physical and psychological symptom distress, and the perceived benefits of discussing advance care planning (ACP) with CF clinicians. Feasibility was assessed by the rate of survey completion, survey reminders, and missed surveys during a 9-month rolling enrollment period. **RESULTS:** Of 74 participants (47.3% women, 94.4% white), 36.7% had comorbid diabetes, and 56.9% had an FEV1% predicted score of 40-69. In total, patients completed 456 (80.6%) of 566 surveys every 30 days over the assessment period. Sixty-five (87.8%) completed 405 (79.7%) of 508 surveys online and 9 (12.2%) completed 51 (88.0%) of 58 surveys using a combination of online, telephone, and mail-based methods. Many surveys were completed without reminders (online: 261 [64.4%] of 405; combined methods: 29 [56.9%] of 51), with 166 (36.4%) surveys requiring 1 or more reminders. Further, 23.0% (17) of patients noted elevated global distress; 20.3% (15) endorsed physical symptom distress, 12.2% (9) had psychological distress, and 58.1% (43) reported that discussing ACP would be beneficial. **CONCLUSIONS:** Repeated web-based screening for symptom distress and ACP preferences is feasible in adult CF patients. Future studies should assess the system's generalizability and staff resources when implementing reminders and non-web methods of completion.

Barbour, P. J., et al. (2016). "Telehealth for patients with Parkinson's disease: delivering efficient and sustainable long-term care." *Hosp Pract (1995)* **44**(2): 92-97.

OBJECTIVES: We set out to demonstrate the benefits of providing long-term care via telehealth for patients with Parkinson's disease living in continuous care facilities. **METHODS:** A cohort of 16 patients with Parkinson's disease residing at one of 2 locations of a multi-facility continuous care retirement organization were seen virtually in follow-up over a 3-year period by Telehealth Services at a large, academic, tertiary care hospital in southeastern Pennsylvania. The data collected during that period, studied retrospectively, included demographic information, number of telehealth visits, and UPDRS scores obtained at each visit. Satisfaction and potential cost savings were also reviewed. **RESULTS:** UPDRS scores declined over the period of observation, from a range of 18-60 at study start to 28-72 at study end. Actual cost savings are difficult to define; however, the cost per telehealth visit at \$117.30 was often lower than the facility's average cost for transporting patients to a visit in the neurologist's office. Patients, families, subspecialists, and the nursing staff expressed uniformly high satisfaction with telehealth. **CONCLUSION:** This model for providing care proved to be sustainable and efficient, and promoted collaboration among the providers at the long-term care facility and those at the remote site. These benefits may be applicable to patients with degenerative disorders in similar settings.

Bator, E. X., et al. (2015). "The burden of attending a pediatric surgical clinic and family preferences toward telemedicine." *J Pediatr Surg* **50**(10): 1776-1782.

BACKGROUND/PURPOSE: Indirect expenses for accessing health care may place significant fiscal strain on Canadian families. Telemedicine alternatives, using email, telephone, and video conferencing, can mitigate such financial burdens by reducing travel and related costs. Our objectives were to assess costs that families incur visiting an outpatient pediatric surgical clinic, and family attitudes toward telemedicine alternatives. **METHODS:** A survey was offered pre-consult to all families who attended pediatric urology and general surgery outpatient clinics over a three-month period. **RESULTS:** A total of 1032 of 1574 families screened participated (66.0%). Less than half (18.5%) of participants traveled over 200 km, and 32.9% spent over 4 hours in transit, round-trip. The proportion of participants who spent over \$50 on travel and ancillary expenses was 33.0%. In 74.0% of families, 1 or more adults missed work. The proportion of families who perceived costs as somewhat high or high was 29.1%. Perceived cost was positively correlated to distance traveled, money spent, and missed work ($p < 0.01$). Most were comfortable with medical communication using technology; and 34.3%-42.7% would avoid an in-person clinic visit utilizing email, telephone, and video conferencing. Higher perceived cost ($p < 0.001$) and distance traveled ($p < 0.01$) were only weakly associated with greater willingness to substitute a clinic visit with video conferencing. **CONCLUSIONS:** Many families face high costs related to routine outpatient clinical visits, and there is a substantial willingness by them to access telemedicine alternatives, rather than the traditional face-to-face clinical visit.

Batsis, J. A., et al. (2017). "Telemedicine and primary care obesity management in rural areas - innovative approach for older adults?" *BMC Geriatr* **17**(1): 6.

BACKGROUND: The growing prevalence of obesity is paralleling a rise in the older adult population creating an increased risk of functional impairment, nursing home placement and early mortality. The Centers for Medicare and Medicaid recognized the importance of treating obesity and instituted a benefit in primary care settings to encourage intensive behavioral therapy in beneficiaries by primary care clinicians. This benefit covers frequent, brief, clinic visits designed to address older adult obesity. **DISCUSSION:** We describe the challenges in the implementation and delivery into real-world settings. The challenges in rural settings that have the fastest growing elderly population, high obesity rates, but also workforce shortages and lack of specialized services are emphasized. The use of Telemedicine has successfully been implemented in other specialties and could be a useful modality in delivering much needed intensive behavioral therapy, particularly in distant, under-resourced environments. This review outlines some of the challenges with the current benefit and proposed solutions in overcoming rural primary care barriers to implementation, including changes in staffing models. **CONCLUSIONS:** Recommendations to extend the benefit's coverage to be more inclusive of non-physician team members is needed but also for improvement in reimbursement for telemedicine services for older adults with obesity.

Batterham, P. J., et al. (2015). "Developing a roadmap for the translation of e-mental health services for depression." *Aust N Z J Psychiatry* **49**(9): 776-784.

OBJECTIVE: e-Mental health services have been shown to be effective and cost-effective for the treatment of depression. However, to have optimal impact in reducing the burden of depression, strategies for wider reach and uptake are needed. **METHOD:** A review was conducted to assess the evidence supporting use of e-mental health programmes for treating depression. From the review, models of dissemination and gaps in translation were identified, with a specific focus on characterising barriers and facilitators to uptake within the Australian healthcare context. Finally, recommendations for promoting the translation of e-mental health services in Australia were developed. **RESULTS:** There are a number of effective and cost-effective e-health applications available for treating depression in community and clinical settings. Four primary models of dissemination were identified: unguided, health service-supported, private ownership and clinically guided. Barriers to translation include clinician reluctance, consumer awareness, structural barriers such as funding and gaps in the translational evidence base. **CONCLUSION:** Key strategies for increasing use of e-mental health programmes include endorsement of e-mental health services by government entities, education for clinicians and consumers, adequate funding of e-mental health services, development of an accreditation system, development of translation-focused activities and support for further translational research. The impact of these implementation strategies is likely to include economic gains, reductions in disease burden and greater availability of more interventions for prevention and treatment of mental ill-health complementary to existing health and efficient evidence-based mental health services.

Beach, M., et al. (2001). "Evaluating telemedicine in an accident an emergency setting." *Computer Methods and Programs in Biomedicine* **64**: 215-223.

Benjamin, E. M., et al. (2013). "Impact of cardiac telemetry on patient safety and cost." *Am J Manag Care* **19**(6): e225-232.

BACKGROUND: With the impetus for healthcare reform and the imperative for healthcare organizations to improve efficiency and reduce waste, it is valuable to examine high-volume procedures and practices in order to identify potential overuse. At the same time, organizations must ensure that improved efficiency does not inadvertently reduce patient safety. **METHODS:** We undertook a multicenter analysis of the use of adult cardiac telemetry outside of the intensive care unit or step-down units at 4 teaching hospitals to determine the percentage of monitoring days that were not justified by an accepted indication and the monetary costs associated with these nonindicated days. We also assessed the safety of eliminating monitoring on days when it was not justified by looking at the incidence of arrhythmias. **RESULTS:** We found that in 35% of telemetry days, telemetry use was not supported by an accepted set of clinical indications. The incidence of arrhythmias on nonindicated days was low (3.1 per 100 days of monitoring per nonindicated day), and the arrhythmias detected were clinically insignificant. Eliminating monitoring on nonindicated days could save a minimum of \$53 per patient per day. The average 400-bed hospital with a conservative estimate of 5000 nonindicated patientdays per year could save \$250,000 per year. **CONCLUSION:** Reducing the use of telemetry on nonindicated days may provide an opportunity for institutions to safely reduce cost as well as staff time and effort, while maintaining and potentially increasing patient safety.

Bishop, T. F., et al. (2013). "Electronic communication improves access, but barriers to its widespread adoption remain." *Health Aff (Millwood)* **32**(8): 1361-1367.

Because electronic communication is quick, convenient, and inexpensive for most patients, care that is truly patient centered should promote the use of such communication between patients and providers, even using it as a substitute for office visits when clinically appropriate. Despite the potential benefits of electronic communication, fewer than 7 percent of providers used it in 2008. To learn from the experiences of providers that have widely incorporated electronic communication into patient care, we interviewed leaders of twenty-one medical groups that use it extensively with

patients. We also interviewed staff in six of those groups. Electronic communication was widely perceived to be a safe, effective, and efficient means of communication that improves patient satisfaction and saves patients time but that increases the volume of physician work unless office visits are reduced. Practice redesign and new payment methods are likely necessary for electronic communication to be more widely used in patient care.

Black, J. T., et al. (2014). "A remote monitoring and telephone nurse coaching intervention to reduce readmissions among patients with heart failure: study protocol for the Better Effectiveness After Transition - Heart Failure (BEAT-HF) randomized controlled trial." *Trials* **15**: 124.

BACKGROUND: Heart failure is a prevalent health problem associated with costly hospital readmissions. Transitional care programs have been shown to reduce readmissions but are costly to implement. Evidence regarding the effectiveness of telemonitoring in managing the care of this chronic condition is mixed. The objective of this randomized controlled comparative effectiveness study is to evaluate the effectiveness of a care transition intervention that includes pre-discharge education about heart failure and post-discharge telephone nurse coaching combined with home telemonitoring of weight, blood pressure, heart rate, and symptoms in reducing all-cause 180-day hospital readmissions for older adults hospitalized with heart failure. **METHODS/DESIGN:** A multi-center, randomized controlled trial is being conducted at six academic health systems in California. A total of 1,500 patients aged 50 years and older will be enrolled during a hospitalization for treatment of heart failure. Patients in the intervention group will receive intensive patient education using the 'teach-back' method and receive instruction in using the telemonitoring equipment. Following hospital discharge, they will receive a series of nine scheduled health coaching telephone calls over 6 months from nurses located in a centralized call center. The nurses also will call patients and patients' physicians in response to alerts generated by the telemonitoring system, based on predetermined parameters. The primary outcome is readmission for any cause within 180 days. Secondary outcomes include 30-day readmission, mortality, hospital days, emergency department (ED) visits, hospital cost, and health-related quality of life. **DISCUSSION:** BEAT-HF is one of the largest randomized controlled trials of telemonitoring in patients with heart failure, and the first explicitly to adapt the care transition approach and combine it with remote telemonitoring. The study population also includes patients with a wide range of demographic and socioeconomic characteristics. Once completed, the study will be a rich resource of information on how best to use remote technology in the care management of patients with chronic heart failure. **TRIAL REGISTRATION:** ClinicalTrials.gov # NCT01360203.

Blackman, K. (2016). "Covering and Reimbursing Telehealth Services." *NCSL Legisbrief* **24**(4): 1-2.

Policymakers who are striving to achieve better health care, improved health outcomes and lower costs are considering new strategies and technologies. Telehealth is a tool that uses technology to provide health services remotely, and state leaders are looking to it now more than ever as a way to address workforce gaps and reach underserved patients. Among the challenges facing state lawmakers who are working to introduce or expand telehealth is how to handle covering patients and reimbursing providers.

Blignault, I. (2000). "Multipoint videoconferencing in health : a review of three years' experience in Queensland, Australia." *Telemedicine Journal* **6**(2): 269-273, 261 tabl., 262 fig.
<http://online.liebertpub.com/doi/abs/10.1089/107830200415216>

Boling, P. A., et al. (2013). "Improving outcomes and lowering costs by applying advanced models of in-home care." *Cleve Clin J Med* **80 Electronic Suppl 1**: eS7-14.

With advances in monitoring and telemedicine, the complexity of care administered in the home to properly selected patients can approach that delivered in the hospital. The challenges include making sure that qualified personnel regularly visit the patient at home, both individually and in teams; information is accurately communicated among the caregiver teams across venues and over time; and patients understand the information communicated to them by providers. Despite these challenges, the benefits of treating chronically or terminally ill patients at home are significant. Among the most

important are improved patient satisfaction and reduced cost. Numerous studies have shown that most patients prefer to spend their convalescence or their last days at home. The financial benefits of enabling patients to recover or to die at home are significant.

Boudreau, F., et al. (2015). "Rationale, design and baseline characteristics of a randomized controlled trial of a web-based computer-tailored physical activity intervention for adults from Quebec City." BMC Public Health **15**: 1038.

BACKGROUND: The relationship between physical activity and cardiovascular disease (CVD) protection is well documented. Numerous factors (e.g. patient motivation, lack of facilities, physician time constraints) can contribute to poor PA adherence. Web-based computer-tailored interventions offer an innovative way to provide tailored feedback and to empower adults to engage in regular moderate- to vigorous-intensity PA. To describe the rationale, design and content of a web-based computer-tailored PA intervention for Canadian adults enrolled in a randomized controlled trial (RCT). **METHODS/DESIGN:** 244 men and women aged between 35 and 70 years, without CVD or physical disability, not participating in regular moderate- to vigorous-intensity PA, and familiar with and having access to a computer at home, were recruited from the Quebec City Prospective Urban and Rural Epidemiological (PURE) study centre. Participants were randomized into two study arms: 1) an experimental group receiving the intervention and 2) a waiting list control group. The fully automated web-based computer-tailored PA intervention consists of seven 10- to 15-min sessions over an 8-week period. The theoretical underpinning of the intervention is based on the I-Change Model. The aim of the intervention was to reach a total of 150 min per week of moderate- to vigorous-intensity aerobic PA. **DISCUSSION:** This study will provide useful information before engaging in a large RCT to assess the long-term participation and maintenance of PA, the potential impact of regular PA on CVD risk factors and the cost-effectiveness of a web-based computer-tailored intervention. **TRIAL REGISTRATION:** ISRCTN36353353 registered on 24/07/2014.

Bradford, N. K., et al. (2014). "Paediatric palliative care by video consultation at home: a cost minimisation analysis." BMC Health Serv Res **14**: 328.

BACKGROUND: In the vast state of Queensland, Australia, access to specialist paediatric services are only available in the capital city of Brisbane, and are limited in regional and remote locations. During home-based palliative care, it is not always desirable or practical to move a patient to attend appointments, and so access to care may be even further limited. To address these problems, at the Royal Children's Hospital (RCH) in Brisbane, a Home Telehealth Program (HTP) has been successfully established to provide palliative care consultations to families throughout Queensland. **METHODS:** A cost minimisation analysis was undertaken to compare the actual costs of the HTP consultations, with the estimated potential costs associated with face-to-face-consultations occurring by either i) hospital based consultations in the outpatients department at the RCH, or ii) home visits from the Paediatric Palliative Care Service. The analysis was undertaken from the perspective of the Children's Health Service. The analysis was based on data from 95 home video consultations which occurred over a two year period, and included costs associated with projected: clinician time and travel; costs reimbursed to families for travel through the Patients Travel Subsidy (PTS) scheme; hospital outpatient clinic costs, project co-ordination and equipment and infrastructure costs. The mean costs per consultation were calculated for each approach. **RESULTS:** Air travel (n = 24) significantly affected the results. The mean cost of the HTP intervention was \$294 and required no travel. The estimated mean cost per consultation in the hospital outpatient department was \$748. The mean cost of home visits per consultation was \$1214. Video consultation in the home is the most economical method of providing a consultation. The largest costs avoided to the health service are those associated with clinician time required for travel and the PTS scheme. **CONCLUSION:** While face-to-face consultations are the gold standard of care, for families located at a distance from the hospital, video consultation in the home presents an effective and cost efficient method to deliver a consultation. Additionally video consultation in the home ensures equity of access to services and minimum disruption to hospital based palliative care teams.

Brazionis, L., et al. (2017). "An evaluation of the telehealth facilitation of diabetes and cardiovascular care in remote Australian Indigenous communities: - protocol for the telehealth eye and associated medical services network [TEAMSnet] project, a pre-post study design." *BMC Health Serv Res* **17**(1): 13.

BACKGROUND: Despite substantial investment in detection, early intervention and evidence-based treatments, current management strategies for diabetes-associated retinopathy and cardiovascular disease are largely based on real-time and face-to-face approaches. There are limited data re telehealth facilitation in type 2 diabetes management. Therefore, we aim to investigate efficacy of telehealth facilitation of diabetes and cardiovascular disease care in high-risk vulnerable Aboriginal and Torres Strait Islanders in remote/very remote Australia. **METHODS:** Using a pre-post intervention design, 600 Indigenous Australians with type 2 diabetes will be recruited from three primary-care health-services in the Northern Territory. Diabetes status will be based on clinical records. There will be four technological interventions: 1. Baseline retinal imaging [as a real-time patient education/engagement tool and telehealth screening strategy]. 2. A lifestyle survey tool administered at approximately 6-months. 3. At approximately 6- and 18-months, an electronic cardiovascular disease and diabetes decision-support tool based on current guidelines in the Standard Treatment Manual of the Central Australian Rural Practitioner's Association to generate clinical recommendations. 4. Mobile tablet technology developed to enhance participant engagement in self-management. Data will include: Pre-intervention clinical and encounter-history data, baseline retinopathy status, decision-support and survey data/opportunistic mobile tablet encounter data. The primary outcome is increased participant adherence to clinical appointments, a marker of engagement and self-management. A cost-benefit analysis will be performed. **DISCUSSION:** Remoteness is a major barrier to provision and uptake of best-practice chronic disease management. Telehealth, beyond videoconferencing of consultations, could facilitate evidence-based management of diabetes and cardiovascular disease in Indigenous Australians and serve as a model for other conditions. **TRIAL REGISTRATION:** Australia and New Zealand Clinical Trials Register (ANZCTR): ACTRN 12616000370404 was retrospectively registered on 22/03/2016.

Breen, S., et al. (2015). "The Patient Remote Intervention and Symptom Management System (PRISMS) - a Telehealth- mediated intervention enabling real-time monitoring of chemotherapy side-effects in patients with haematological malignancies: study protocol for a randomised controlled trial." *Trials* **16**: 472.

BACKGROUND: Outpatient chemotherapy is a core treatment for haematological malignancies; however, its toxicities frequently lead to distressing/potentially life-threatening side-effects (neutropenia/infection, nausea/vomiting, mucositis, constipation/diarrhoea, fatigue). Early detection/management of side-effects is vital to improve patient outcomes, decrease morbidity and limit lengthy/costly hospital admissions. The ability to capture patient-reported health data in real-time, is regarded as the 'gold-standard' to allow rapid clinical decision-making/intervention. This paper presents the protocol for a Phase 3 multi-site randomised controlled trial evaluating a novel nurse-led Telehealth intervention for remote monitoring/management of chemotherapy side-effects in Australian haematological cancer patients. **METHODS/DESIGN:** Two hundred and twenty-two patients will be recruited from two hospitals. Eligibility criteria include: diagnosis of chronic lymphocytic leukaemia/Hodgkin's/non-Hodgkin's lymphoma; aged ≥ 18 years; receiving ≥ 2 cycles chemotherapy. Patients will be randomised 1:1 to either the control or intervention arm with stratification by diagnosis, chemotherapy toxicity (high versus low), receipt of previous chemotherapy and hospital. Patients allocated to the control arm will receive 'Usual Care' whilst those allocated to the intervention will receive the intervention in addition to 'Usual Care'. Intervention patients will be provided with a computer tablet and software prompting twice-daily completion of physical/emotional scales for up to four chemotherapy cycles. Should patient data exceed pre-determined limits an Email alert is delivered to the treatment team, prompting nurses to view patient data, and contact the patient to provide clinical intervention. In addition, six scheduled nursing interventions will be completed to educate/support patients in use of the software. Patient outcomes will be measured cyclically (midpoint and end of cycles) via pen-and-paper self-report alongside review of the patient medical record. The primary outcome is burden due to nausea, mucositis, constipation and fatigue. Secondary outcomes include: burden due to vomiting and diarrhoea; psychological distress; ability to self-manage health; level of cancer information/support needs and; utilisation of health services. Analyses will be intention-to-treat. A cost-effectiveness analysis is

planned. DISCUSSION: This trial is the first in the world to test a remote monitoring/management intervention for adult haematological cancer patients receiving chemotherapy. Future use of such interventions have the potential to improve patient outcomes/safety and decrease health care costs by enabling early detection/clinical intervention. TRIAL REGISTRATION: ACTRN12614000516684 . Date registered: 12 March 2014 (registered retrospectively).

Brooks, E., et al. (2013). "Provider barriers to telemental health: obstacles overcome, obstacles remaining." Telemed J E Health **19**(6): 433-437.

Many providers are hesitant to use telemental health technologies. When providers are queried, various barriers are presented, such as the clinician's skepticism about the effectiveness of telemental health (TMH), viewing telehealth technologies as inconvenient, or reporting difficulties with medical reimbursement. Provider support for TMH is critical to its diffusion because clinicians often serve as the initial gatekeepers to telehealth implementation and program success. In this article, we address provider concerns in three broad domains: (1) personal barriers, (2) clinical workflow and technology barriers, and (3) licensure, credentialing, and reimbursement barriers. We found evidence that, although many barriers have been discussed in the literature for years, advancements in TMH have rapidly reduced obstacles for its use. Improvements include extensive opportunities for training, a growing evidence base supporting positive TMH outcomes, and transformations in technologies that improve provider convenience and transmission quality. Recommendations for further change are discussed within each domain. In particular, it is important to grow and disseminate data underscoring the promise and effectiveness of TMH, integrate videoconferencing capabilities into electronic medical record platforms, expand TMH reimbursement, and modify licensure standards.

Brown, A. D. (2014). "Consumer e-health solutions: the cure for Baumol's disease?" Healthc Pap **13**(4): 4-7.

Baumol's disease is the fact that costs in persistently labour-intensive sectors such as healthcare do not drop, despite increased use of technology. The idea of consumer e-health solutions is seductive, because it provides one option for treating Baumol's disease. However, barriers to the implementation of these solutions exist, and the successful treatment of Baumol's disease with consumer e-health solutions rests on more than their removal. In this introduction, the editor-in-chief adds to the conversation four shifts that are critical to reaping the benefits of consumer e-health solutions: moving the focus from privacy to protection; from mere access to the use of information in decision-making; from the patient-provider dyad to one that includes a full formal and informal care team; and from structural solutions in healthcare to ones designed around the goals we have for our health system.

Brown-Connolly, N. E., et al. (2014). "Mobile health is worth it! Economic benefit and impact on health of a population-based mobile screening program in new Mexico." Telemed J E Health **20**(1): 18-23.

BACKGROUND: HABITS for Life was a 3-year initiative to broadly deliver a statewide biometric and retinal screening program via a mobile unit throughout New Mexico at no charge to participants. The program goal-to identify health risk and improve population health status-was tested over a 3-year period. Value to participants and impact to the healthcare system were measured to quantify impact and value of investing in prevention at the community level. MATERIALS AND METHODS: We used the Mobile Health Map Return-on-Investment Calculator, a mobile screening unit, biometric screening, retinography, and community coordination. Our systems included satellite, DSL, and 3G connectivity, a Tanita(R) (Arlington Heights, IL) automated body mass index-measuring scale, the Cholestec(R) (Alere, Waltham, MA) system for biomarkers and glycosylated hemoglobin, a Canon (Melville, NY) CR-1 Mark II camera, and the Picture Archiving Communication System. RESULTS: In this report for the fiscal year 2011 time frame, 6,426 individuals received biometric screening, and 5,219 received retinal screening. A 15:1 return on investment was calculated; this excluded retinal screening for the under-65 year olds, estimated at \$10 million in quality-adjusted life years saved. Statistically significant improvement in health status evidenced by sequential screening included a decrease in total cholesterol level ($p=0.002$) ($n=308$) and an increase in high-density lipoprotein level after the first and second screening ($p=0.02$ and $p=0.01$, respectively), but a decrease in mean random glucose level was not statistically significant ($p=0.62$). Retinal results indicate 28.4% ($n=1,482$) with a positive/abnormal finding, of

which 1.79% (n=93) required immediate referral for sight-threatening retinopathy and 27% (n=1,389) required follow-up of from 3 months to 1 year. CONCLUSIONS: Screening programs are cost-effective and provide value in preventive health efforts. Broad use of screening programs should be considered in healthcare redesign efforts. Community-based screening is an effective strategy to identify health risk, improve access, provide motivation to change health habits, and improve physical status while returning significant value.

Brunette, M. F., et al. (2015). "Expanding Cessation Pharmacotherapy Via Videoconference Educational Outreach to Prescribers." *Nicotine Tob Res* **17**(8): 960-967.

INTRODUCTION: Smoking cessation pharmacotherapy is underutilized by people with mental illnesses, who smoke at high rates and die prematurely of smoking-related diseases. Educational outreach can improve prescribing, but distances impede widespread use of this practice. Little research has assessed whether videoconference can effectively deliver educational outreach. We conducted a randomized, controlled trial of in-person versus videoconference educational outreach for smoking cessation pharmacotherapy across a state mental health system. METHODS: We randomly assigned clinics to receive in-person or videoconference educational outreach with audit and feedback for cessation pharmacotherapy. Prescribers completed brief questionnaires before and after the intervention. With segmented regression analysis of interrupted time series, we evaluated prescribing trends in Medicaid pharmacy claims for nicotine replacement therapy (NRT) and varenicline, with interaction terms for the effect of intervention type (in-person vs. videoconference). RESULTS: With interaction terms in the model, filled NRT prescriptions increased after the intervention compared to before ($p < .01$). The pattern of fills after the intervention were different at centers receiving in-person compared to videoconference educational outreach ($p < .02$) without clearly favoring one over the other. Additionally, filled varenicline prescriptions increased after the intervention compared to before ($p = .04$), but type of intervention delivery did not influence varenicline fills. Prescriber satisfaction with the educational intervention was high and prescriber attitudes became more positive in both groups. CONCLUSION: This study suggests that single session educational outreach with audit and feedback can increase cessation pharmacotherapy utilization, and that videoconference delivery could be an effective, scalable approach to improve workforce capacity in systems serving mentally ill smokers.

Bursell, S. E., et al. (2016). "Evolving telehealth reimbursement in Australia." *Intern Med J* **46**(8): 977-981.

Video-based consultation is the only telehealth service reimbursed by the Medicare Benefits Schedule in Australia, but the uptake of telehealth is still low and inconsistent. There is a clear need for the development of appropriate medical evidence to support implementation of telehealth services. With the ubiquitous use of mobile phones, mobile health becomes important in facilitating health services and impacting clinical outcomes anywhere.

Butler, R. J. et Johnson, W. G. (2016). "Rating the digital help: electronic medical records, software providers, and physicians." *International Journal of Health Economics and Management* **16**(3): 269-283.
<http://dx.doi.org/10.1007/s10754-016-9190-8>

To separate the effects of physicians' characteristics on the perceived productivity of EMRs from the effects of limitations on usability inherent in EMR design, a multivariate regression model is used to estimate the factors influencing physicians' rankings of five attributes of their EMRs, namely; ease of use and reliability; the EMRs effect on physician and staff productivity and the EMRs performance vs. vendor's promises. We divide the factors influencing the rankings into three groups: physician characteristics, EMR characteristics and practice characteristics (type of practice, size, and location). The data are from approximately 1800 practicing physicians in Arizona. Physician's characteristics influence perceived ease of use and physicians' productivity, but not staff productivity, reliability or vendors' promised performance. Practice type and EMR characteristics affect perceived productivity, reliability and performance versus vendors' promises. Vendor-specific effects are highly correlated across all five attributes and are always jointly significant. EMR characteristics are the most significant influence on physicians' perceptions of the EMRs effect on their productivity and that of their staff.

Physicians' characteristics (particularly age) have a small but significant influence on perceived productivity.

Cady, R., et al. (2009). "A telehealth nursing intervention reduces hospitalizations in children with complex health conditions." *J Telemed Telecare* **15**(6): 317-320.

The U Special Kids Program (USK) at the University of Minnesota provides care coordination and case management services by telephone to children with special health-care needs. We measured the effect of the USK programme on hospital resource utilization using a retrospective record review. Information on hospitalizations was collected for children enrolled in the programme for at least two years and validated for accuracy against inpatient claims data. Hospitalizations were classified as planned, unplanned or due to lack of home care. A total of 43 children enrolled in the USK programme between July 1996 and December 2006 met the study criteria. The children had multiple, complex conditions. During the period of the study, there were 61 planned hospitalizations, 184 unplanned hospitalizations and 3 hospitalizations due to lack of home care. The number of unplanned hospitalizations decreased from 74 in the first year of enrolment to 35 in the second; this reduction was significant ($P < 0.007$). In the subsequent years, the rate of unplanned admissions stabilized. In contrast, the rate of planned hospitalizations was relatively constant over the five-year enrolment period. Telephone-based care coordination and case management is a promising approach for children with multiple, complex health conditions.

Cain, S. M., et al. (2017). "Clinical assessment and management of general surgery patients via synchronous telehealth." *J Telemed Telecare* **23**(2): 371-375.

Objective This paper describes how a clinical team at Landstuhl Regional Medical Center (LRMC) successfully integrated synchronous telehealth (TH) into their routine clinical practice. **Methods and materials** Synchronous TH encounters were performed using Polycom(R) software on surgeons' computers with high-definition (HD) cameras on monitors at distant sites and PolyCom HDX9000(R) Telehealth Practitioner Carts at originating sites. Patients provided consented and were presented to general surgeons by nurses and medical technicians at Army health clinics throughout the European Theater. **Results** In calendar year (CY) 2014, five general surgeons and two surgical physician assistants (PAs) at Landstuhl Regional Medical Center along with registered nurses (RNs) at six originating clinic sites throughout Europe completed 130 synchronous TH encounters for 101 general surgery patients resulting in 73 completed and 16 recommended surgeries. Eighty-eight percent of patients had a completed or recommended surgery. No surgeries or procedures planned after initial TH evaluation were cancelled. Originating site clinics ranged in distance from 68 miles to 517 miles. Acceptance by providers, patients and clinic staff was high. **Conclusion** Synchronous TH was effective and safe in evaluating common general surgical conditions. We excluded sensitive and complex conditions requiring a nuanced physical examination. The TH efforts of the general surgery staff have resulted in high-quality, seamless and predictable TH activities that continue to expand into other surgical and medical specialties beyond general surgery. Seven surgeons and two PAs use synchronous TH regularly serving patients over a broad geographic area.

Callas, P. W., et al. (2000). "Improved rural provider access to continuing medical education through interactive video conferencing." *Telemedicine Journal and E-Health* **6**(4): 393-399, 391 fig., 391 tabl.

http://online.liebertpub.com/doi/abs/10.1089/15305620050503861?url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&rfr_dat=cr_pub%3Dpubmed

Capner, M. (2000). "Videoconferencing in the provision of psychological services at a distance." *Journal of Telemedicine and Telecare* **6**(6): 311-319.

Carlson, J., et al. (2014). "Effectiveness of Telebehavioral Health Program Nurse Case Managers (NCM): Data Collection Tools and the Process for NCM-Sensitive Outcome Measures." *US Army Med Dep J*: 36-45.

As a part of our nation's pursuit of improvements in patient care outcomes, continuity of care, and cost containment, the case manager has become a vital member on interdisciplinary teams and in health care agencies. Telebehavioral health programs, as a relatively new method of delivering

behavioral health care, have recently begun to incorporate case management into their multidisciplinary teams. To determine the efficacy and efficiency of healthcare programs, program managers are charged with the determination of the outcomes of the care rendered to patient populations. However, programs that use telehealth methods to deliver care have unique structures in place that impact ability to collect outcome data. A military medical center that serves the Pacific region developed surveys and processes to distribute, administer, and collect information about a telehealth environment to obtain outcome data for the nurse case manager. This report describes the survey development and the processes created to capture nurse case manager outcomes. Additionally, the surveys and processes developed in this project for measuring outcomes may be useful in other settings and disciplines.

Celler, B. G., et al. (2014). "Design of a multi-site multi-state clinical trial of home monitoring of chronic disease in the community in Australia." *BMC Public Health* **14**: 1270.

BACKGROUND: Telehealth services based on at-home monitoring of vital signs and the administration of clinical questionnaires are being increasingly used to manage chronic disease in the community, but few statistically robust studies are available in Australia to evaluate a wide range of health and socio-economic outcomes. The objectives of this study are to use robust statistical methods to research the impact of at home telemonitoring on health care outcomes, acceptability of telemonitoring to patients, carers and clinicians and to identify workplace cultural factors and capacity for organisational change management that will impact on large scale national deployment of telehealth services. Additionally, to develop advanced modelling and data analytics tools to risk stratify patients on a daily basis to automatically identify exacerbations of their chronic conditions. **METHODS/DESIGN:** A clinical trial is proposed at five locations in five states and territories along the Eastern Seaboard of Australia. Each site will have 25 Test patients and 50 case matched control patients. All participants will be selected based on clinical criteria of at least two hospitalisations in the previous year or four or more admissions over the last five years for a range of one or more chronic conditions. Control patients are matched according to age, sex, major diagnosis and their Socio-Economic Indexes for Areas (SEIFA). The Trial Design is an Intervention control study based on the Before-After-Control-Impact (BACI) design. **DISCUSSION:** Our preliminary data indicates that most outcome variables before and after the intervention are not stationary, and accordingly we model this behaviour using linear mixed-effects (lme) models which can flexibly model within-group correlation often present in longitudinal data with repeated measures. We expect reduced incidence of unscheduled hospitalisation as well as improvement in the management of chronically ill patients, leading to better and more cost effective care. Advanced data analytics together with clinical decision support will allow telehealth to be deployed in very large numbers nationally without placing an excessive workload on the monitoring facility or the patient's own clinicians. **TRIAL REGISTRATION:** Registered with Australian New Zealand Clinical Trial Registry on 1st April 2013. Trial ID: ACTRN12613000635763.

Chapman Smith, S. N., et al. (2016). "A low-cost, tablet-based option for prehospital neurologic assessment: The iTREAT Study." *Neurology* **87**(1): 19-26.

OBJECTIVES: In this 2-center study, we assessed the technical feasibility and reliability of a low cost, tablet-based mobile telestroke option for ambulance transport and hypothesized that the NIH Stroke Scale (NIHSS) could be performed with similar reliability between remote and bedside examinations. **METHODS:** We piloted our mobile telemedicine system in 2 geographic regions, central Virginia and the San Francisco Bay Area, utilizing commercial cellular networks for videoconferencing transmission. Standardized patients portrayed scripted stroke scenarios during ambulance transport and were evaluated by independent raters comparing bedside to remote mobile telestroke assessments. We used a mixed-effects regression model to determine intraclass correlation of the NIHSS between bedside and remote examinations (95% confidence interval). **RESULTS:** We conducted 27 ambulance runs at both sites and successfully completed the NIHSS for all prehospital assessments without prohibitive technical interruption. The mean difference between bedside (face-to-face) and remote (video) NIHSS scores was 0.25 (1.00 to -0.50). Overall, correlation of the NIHSS between bedside and mobile telestroke assessments was 0.96 (0.92-0.98). In the mixed-effects regression model, there were no statistically significant differences accounting for method of evaluation or differences between sites. **CONCLUSIONS:** Utilizing a low-cost, tablet-based platform and commercial cellular

networks, we can reliably perform prehospital neurologic assessments in both rural and urban settings. Further research is needed to establish the reliability and validity of prehospital mobile telestroke assessment in live patients presenting with acute neurologic symptoms.

Charlton, M., et al. (2015). "Challenges of Rural Cancer Care in the United States." *Oncology (Williston Park)* **29**(9): 633-640.

Rural cancer patients face many challenges in receiving care, including limited availability of cancer treatments and cancer support providers (oncologists, social workers, mental healthcare providers, palliative care specialists, etc), transportation barriers, financial issues, and limited access to clinical trials. Oncologists and other cancer care providers experience parallel challenges in delivering care to their rural cancer patients. Although no one approach fully addresses the many challenges of rural cancer care, a number of promising strategies and interventions have been developed that transcend the issues associated with long travel distances. These include outreach clinics, virtual tumor boards, teleoncology and other telemedicine applications, workforce recruitment and retention initiatives, and provider and patient education programs. Given the projected increase in demand for cancer care due to the aging population and increasing number of Americans with health insurance through the Affordable Care Act, expansion of these efforts and development of new approaches are critical to ensure access to high-quality care.

Chasan, J. E., et al. (2014). "Effect of a teleretinal screening program on eye care use and resources." *JAMA Ophthalmol* **132**(9): 1045-1051.

IMPORTANCE: Telemedicine is a useful clinical method to extend health care to patients with limited access. Minimal information exists on the subsequent effect of telemedicine activities on eye care resources. **OBJECTIVE:** To evaluate the effect of a community-based diabetic teleretinal screening program on eye care use and resources. **DESIGN, SETTING, AND PARTICIPANTS:** The current study was a retrospective medical record review of patients who underwent diabetic teleretinal screening in the community-based clinics of the Atlanta Veterans Affairs Medical Center from October 1, 2008, through March 31, 2009, and who were referred for an ophthalmic examination in the eye clinic. **EXPOSURES:** Clinical medical records were reviewed for a 2-year period after patients were referred from teleretinal screening. The following information was collected for analysis: patient demographics, referral and confirmatory diagnoses, ophthalmology clinic visits, diagnostic procedures, surgical procedures, medications, and spectacle prescriptions. **MAIN OUTCOMES AND MEASURES:** The accuracy between referring and final diagnoses and the eye care resources that were used in the care of referred patients. **RESULTS:** The most common referral diagnoses were nonmacular diabetic retinopathy (43.2%), nerve-related disease (30.8%), lens or media opacity (19.1%), age-related macular degeneration (12.9%), and diabetic macular edema (5.6%). The percentage of agreement among these 5 visually significant diagnoses was 90.4%, with a total sensitivity of 73.6%. Diabetic macular edema required the greatest number of ophthalmology clinic visits, diagnostic tests, and surgical procedures. Using Medicare cost data estimates, the mean cost incurred during a 2-year period per patient seen in the eye clinic was approximately \$1000. **CONCLUSIONS AND RELEVANCE:** Although a teleretinal screening program can be accurate and sensitive for multiple visually significant diagnoses, measurable resource burdens should be anticipated to adequately prepare for the associated increase in clinical care.

Chen, F., et al. (2016). "Clinical and Economic Impact of a Digital, Remotely-Delivered Intensive Behavioral Counseling Program on Medicare Beneficiaries at Risk for Diabetes and Cardiovascular Disease." *PLoS One* **11**(10): e0163627.

BACKGROUND: Type 2 diabetes and cardiovascular disease impose substantial clinical and economic burdens for seniors (age 65 and above) and the Medicare program. Intensive Behavioral Counseling (IBC) interventions like the National Diabetes Prevention Program (NDPP), have demonstrated effectiveness in reducing excess body weight and lowering or delaying morbidity onset. This paper estimated the potential health implications and medical savings of a digital version of IBC modeled after the NDPP. **METHODS AND FINDINGS:** Participants in this digital IBC intervention, the Omada program, include 1,121 overweight or obese seniors with additional risk factors for diabetes or heart

disease. Weight changes were objectively measured via participant use of a networked weight scale. Participants averaged 6.8% reduction in body weight within 26 weeks, and 89% of participants completed 9 or more of the 16 core phase lessons. We used a Markov-based microsimulation model to simulate the impact of weight loss on future health states and medical expenditures over 10 years. Cumulative per capita medical expenditure savings over 3, 5 and 10 years ranged from \$1,720 to 1,770 (3 years), \$3,840 to \$4,240 (5 years) and \$11,550 to \$14,200 (10 years). The range reflects assumptions of weight re-gain similar to that seen in the DPP clinical trial (lower bound) or minimal weight re-gain aligned with age-adjusted national averages (upper bound). The estimated net economic benefit after IBC costs is \$10,250 to \$12,840 cumulative over 10 years. Simulation outcomes suggest reduced incidence of diabetes by 27-41% for participants with prediabetes, and stroke by approximately 15% over 5 years. CONCLUSIONS: A digital, remotely-delivered IBC program can help seniors at risk for diabetes and cardiovascular disease achieve significant weight loss, reduces risk for diabetes and cardiovascular disease, and achieve meaningful medical cost savings. These findings affirm recommendations for IBC coverage by the U.S. Preventive Services Task Force.

Choi Yoo, S. J., et al. (2014). "Cost effectiveness of telecare management for pain and depression in patients with cancer: results from a randomized trial." *Gen Hosp Psychiatry* **36**(6): 599-606.

OBJECTIVE: Pain and depression are prevalent and treatable symptoms among patients with cancer, yet they are often undetected and undertreated. The Indiana Cancer Pain and Depression (INCPAD) trial demonstrated that telecare management can improve pain and depression outcomes. This article investigates the incremental cost effectiveness of the INCPAD intervention. METHODS: The INCPAD trial was conducted in 16 community-based urban and rural oncology practices in Indiana. Of the 405 participants, 202 were randomized to the intervention group and 203 to the usual-care group. Intervention costs were determined, and effectiveness outcomes were depression-free days and quality-adjusted life years. RESULTS: The intervention group was associated with a yearly increase of 60.3 depression-free days (S.E. = 15.4; P < 0.01) and an increase of between 0.033 and 0.066 quality-adjusted life years compared to the usual care group. Total cost of the intervention per patient was US\$1189, which included physician, nurse care manager and automated monitoring set-up and maintenance costs. Incremental cost per depression-free day was US\$19.72, which yields a range of US\$18,018 to US\$36,035 per quality-adjusted life year when converted to that metric. When measured directly, the incremental cost per quality-adjusted life year ranged from US\$10,826 based on the modified EQ-5D to US\$73,286.92 based on the SF-12. CONCLUSION: Centralized telecare management, coupled with automated symptom monitoring, appears to be a cost effective intervention for managing pain and depression in cancer patients.

Clare Liddy, I. M. A. A. et Erin, K. (2017). "Evaluating the Implementation of The Champlain BASE™ eConsult Service in a New Region of Ontario, Canada: A Cross-Sectional Study." *Healthcare Policy* **13**(2): 79-95.
<http://www.longwoods.com/product/25320>

Objective: To replicate an existing electronic consultation (eConsult) service in a new jurisdiction to test its generalizability.

Methods: We conducted a cross-sectional study of all eConsults submitted by providers in the region of Mississauga Halton, Ontario, between January 5, 2015, and May 31, 2016. We compared our results to those from the original pilot in Eastern Ontario. The RE-AIM model served as our study framework.

Results: Providers submitted 594 patient cases to 46 different specialty groups during the study period. Specialists responded in a median of 1.1 days, with 75% of cases answered within four days. Providers rated the service as having high or very high value for themselves and their patients in 92% of cases. The service yielded a net program cost of \$10,321.56.

Conclusion: Our findings resembled those of the initial implementation, though with a faster rate of uptake and lower cost because of the avoidance of start-up and administrative costs.

Clowers, A. N. (2017). Telehealth : Use in Medicare and Medicaid. Washington GAO: 7.
<https://www.gao.gov/assets/690/685987.pdf>

Telehealth can provide an alternative to health care provided in person at a physician's office, particularly for patients who cannot easily travel long distances for care. Medicare pays for some

telehealth services that are subject to statutory and regulatory requirements, such as requiring the patient be present at an originating site like a rural health clinic. This testimony discusses (1) the extent to which telehealth is used by Medicare and Medicaid to provide health care services; (2) factors selected associations representing providers, patients, and payers reported as affecting the use of telehealth in Medicare; and (3) how emerging payment and delivery models could affect the potential use of telehealth in Medicare.

Costa, M. A., et al. (2015). "Telemedicine in Cleft Care: Reliability and Predictability in Regional and International Practice Settings." *J Craniofac Surg* **26**(4): 1116-1120.

BACKGROUND: Regional and international cleft care providers are challenged in their ability to deliver reliable, comprehensive care. Our institution utilizes video teleconferencing to facilitate initial evaluation and postoperative cleft care. This study describes our experience using telemedicine, generates a perioperative treatment algorithm using this technology, and compares cost-utility of telemedicine to in-person ambulatory visits when regional practices are involved. **METHODS:** A 5-year retrospective review of all cleft patients evaluated in an ambulatory setting was conducted. Patient demographics and location, number, and type of telemedicine visits were recorded. Specific treatment algorithms utilizing telemedicine for perioperative care for primary and secondary cleft lip and nasal repair, palatoplasty, and operation for velopharyngeal insufficiency are described. A cost-utility analysis was performed comparing distances between patient homes and primary hub versus telemedicine clinic sites. **RESULTS:** Five hundred nineteen patients were identified; 18.1% attended at least 1 teleconferencing visit. Postoperative follow-up was 100%. The majority of screening, preoperative, and postoperative care was provided using telemedicine. In-person evaluations were performed when intraoral assessments were necessary. Telemedicine visits were associated with an average savings of 239 miles per visit in the United States and 578 miles per visit in Mexico. **CONCLUSIONS:** Video teleconferencing can be used to provide comprehensive regional and international cleft care to facilitate initial evaluations and consistent follow-up. This technology can alleviate the travel burden on families and cleft care providers practicing over a large geographic radius.

Cota, A., et al. (2017). "Review of 5.5 Years' Experience Using E-mail-Based Telemedicine to Deliver Orthopedic Care to Remote Communities." *Telemed J E Health* **23**(1): 37-40.

INTRODUCTION: The use of e-mail-based telemedicine has been demonstrated as an effective and low-cost way of delivering healthcare to patients in remote areas who have limited access to medical services. We established a novel teleorthopedic service for a catchment area encompassing 972,000 km² using a commercial off-the-shelf e-mail application. Before the implementation of this program, patients with acute orthopedic injuries were required to travel by air up to 1,900 km for evaluation by an orthopedic surgeon. In the present study, we examined the patient demographics and consultation characteristics and calculated the cost savings associated with patient travel for this teleorthopedic service. **METHODS:** We retrospectively reviewed 1,000 consecutive e-mail-based consults and radiographic images received for new patients with acute orthopedic injuries from January 2008 to June 2013. Seventy-nine consults were excluded due to incomplete documentation, leaving 921 available for analysis. The service records were examined to identify patient demographics, orthopedic diagnosis, the percentage of patients managed locally, and the medical indications for patients requiring transfer. As the travel costs for patients requiring transport to the university hospital center are borne by governmental health agencies, the savings accrued from treating patients in their home communities were also calculated. **RESULTS:** For the 921 consultations, the mean age of patients was 27 years (range, 3 months-88 years), with 40.7% of all patients being younger than 18 years. The most common diagnoses were ankle fractures (15.2%), clavicle fractures (11.2%), distal radius fractures (11.2%), and fractures of the foot (10.2%). One hundred ninety patients (20.6%) required transfer, whereas 731 patients (79.4%) were treated in their home communities. Of the patients who were transferred, 123 (64.7%) required surgery, 55 (28.9%) required clinical evaluation by an orthopedic surgeon, and 12 (6.4%) required CT or MRI. Cost savings related to return trip travel expenses were calculated to be \$5,538,120 Canadian (CAD) for the review period. **SUMMARY:** Using an e-mail-based teleorthopedic service to manage acutely injured patients in remote communities allowed 79% of patients to be treated locally, with travel-related cost savings of \$5,538,120 CAD.

Cui, Y., et al. (2013). "Economic evaluation of Manitoba Health Lines in the management of congestive heart failure." Healthc Policy 9(2): 36-50.

OBJECTIVE: This one-year study investigated whether the Manitoba Provincial Health Contact program for congestive heart failure (CHF) is a cost-effective intervention relative to the standard treatment. **DESIGN:** Individual patient-level, randomized clinical trial of cost-effective model using data from the Health Research Data Repository at the Manitoba Centre for Health Policy, University of Manitoba. **METHODS:** A total of 179 patients aged 40 and over with a diagnosis of CHF levels II to IV were recruited from Winnipeg and Central Manitoba and randomized into three treatment groups: one receiving standard care, a second receiving Health Lines (HL) intervention and a third receiving Health Lines intervention plus in-house monitoring (HLM). A cost-effectiveness study was conducted in which outcomes were measured in terms of QALYs derived from the SF-36 and costs using 2005 Canadian dollars. Costs included intervention and healthcare utilization. Bootstrap-resampled incremental cost-effectiveness ratios were computed to take into account the uncertainty related to small sample size. **RESULTS:** The total per-patient mean costs (including intervention cost) were not significantly different between study groups. Both interventions (HL and HLM) cost less and are more effective than standard care, with HL able to produce an additional QALY relative to HLM for \$2,975. The sensitivity analysis revealed that there is an 85.8% probability that HL is cost-effective if decision-makers are willing to pay \$50,000. **CONCLUSION:** Findings demonstrate that the HL intervention from the Manitoba Provincial Health Contact program for CHF is an optimal intervention strategy for CHF management compared to standard care and HLM.

Darkins, A., et al. (2015). "Reduced cost and mortality using home telehealth to promote self-management of complex chronic conditions: a retrospective matched cohort study of 4,999 veteran patients." Telemed J E Health 21(1): 70-76.

OBJECTIVE: This retrospective analysis of 2009-2012 Veterans Health Administration (VHA) administrative data assessed the efficacy of care coordination home telehealth (CCHT), a model of care designed to reduce institutional care. **MATERIALS AND METHODS:** Outcomes for 4,999 CCHT-non-institutional care (NIC) patients were compared with usual (non-CCHT) care in a matched cohort group (MCG) of 183,872 Veterans. Both cohorts were comprised of patients with complex chronic conditions with statistically similar baseline (pre-CCHT enrollment) healthcare costs, when adjusted for age, sex, chronic disease, emergency room (ER) visits, hospital admissions, hospital lengths of stay, and pharmacy costs. **RESULTS:** Subsequent analyses after 12 months of CCHT-NIC enrollment showed mean annual healthcare costs for CCHT-NIC patients fell 4%, from \$21,071 to \$20,206, whereas the corresponding costs for MCG patients increased 48%, from \$20,937 to \$31,055. Higher mean annual pharmacy expenditure of 22% (\$470 over baseline) for CCHT-NIC patients versus 15% for MCG patients (\$326 over baseline) was attributable to the medication compliance effect of better care coordination. Several healthcare cost drivers (e.g., ER visits and admissions) had sizable declines in the CCHT-NIC group. Medicare usage review in both cohorts excluded this as a confounding factor in cost analyses. Prefinal case selection criteria analysis of both cohorts yielded a 9.8% mortality rate in CCHT patients versus 16.58% in non-CCHT patients. **CONCLUSIONS:** This study corroborates previous positive VHA analyses of CCHT but contradicts results from recent non-VHA studies, highlighting the efficacy of the VHA's standardized CCHT model, which incorporates a biopsychosocial approach to care that emphasizes patient self-management.

Davis, M. M., et al. (2014). "A systematic review of clinician and staff views on the acceptability of incorporating remote monitoring technology into primary care." Telemed J E Health 20(5): 428-438.

OBJECTIVE: Remote monitoring technology (RMT) may enhance healthcare quality and reduce costs. RMT adoption depends on perceptions of the end-user (e.g., patients, caregivers, healthcare providers). We conducted a systematic review exploring the acceptability and feasibility of RMT use in routine adult patient care, from the perspectives of primary care clinicians, administrators, and clinic staff. **MATERIALS AND METHODS:** We searched the databases of Medline, IEEE Xplore, and Compendex for original articles published from January 1996 through February 2013. We manually screened bibliographies of pertinent studies and consulted experts to identify English-language studies

meeting our inclusion criteria. RESULTS: Of 939 citations identified, 15 studies reported in 16 publications met inclusion criteria. Studies were heterogeneous by country, type of RMT used, patient and provider characteristics, and method of implementation and evaluation. Clinicians, staff, and administrators generally held positive views about RMTs. Concerns emerged regarding clinical relevance of RMT data, changing clinical roles and patterns of care (e.g., reduced quality of care from fewer patient visits, overtreatment), insufficient staffing or time to monitor and discuss RMT data, data incompatibility with a clinic's electronic health record (EHR), and unclear legal liability regarding response protocols. CONCLUSIONS: This small body of heterogeneous literature suggests that for RMTs to be adopted in primary care, researchers and developers must ensure clinical relevance, support adequate infrastructure, streamline data transmission into EHR systems, attend to changing care patterns and professional roles, and clarify response protocols. There is a critical need to engage end-users in the development and implementation of RMT.

Dawson, N., et al. (2017). "Relation of Telemetry Use and Mortality Risk, Hospital Length of Stay, and Readmission Rates in Patients With Respiratory Illness." *Am J Cardiol* **120**(8): 1416-1420.

The 2004 American Heart Association expert opinion-based guidelines restrict telemetry use primarily to patients with current or high-risk cardiac conditions. Respiratory infections have emerged as a common source of hospitalization, and telemetry is frequently applied without indication in efforts to monitor patient decompensation. In this retrospective study, we aimed to determine whether telemetry impacts mortality risk, length of stay (LOS), or readmission rates in hospitalized patients with acute respiratory infection not meeting American Heart Association criteria. A total of 765 respiratory infection patient encounters with Diagnosis-Related Groups 193, 194, 195, 177, 178 and 179 admitted in 2013 to 2015 to 2 tertiary community-based medical centers (Mayo Clinic, Arizona, and Mayo Clinic, Florida) were evaluated, and outcomes between patients who underwent or did not undergo telemetry were compared. Overall, the median LOS was longer in patients who underwent telemetry (3.0 days vs 2.0 days, $p < 0.0001$). No differences between cohorts were noted in 30-day readmission rates (0.6% vs 1.3%, $p = 0.32$), patient mortality while hospitalized (0.6% vs 1.3%, $p = 0.44$), mortality at 30 days (7.9% vs 7.7%, $p = 0.94$), or mortality at 90 days (13.5% vs 13.5%, $p = 0.99$). Telemetry predicted LOS for both univariate (estimate 1.18, 95% confidence interval 1.06 to 1.32, $p = 0.003$) and multivariate (estimate 1.17, 95% confidence interval 1.06 to 1.30, $p = 0.003$) analyses after controlling for severity of illness but did not predict patient mortality. In conclusion, this study identified that patients with respiratory infection who underwent telemetry without clear indications may face increased LOS without reducing their readmission risk or improving the overall mortality.

De San Miguel, K., et al. (2013). "Telehealth remote monitoring for community-dwelling older adults with chronic obstructive pulmonary disease." *Telemed J E Health* **19**(9): 652-657.

OBJECTIVE: To determine if self-monitoring via home-based telehealth equipment could, when combined with ongoing remote monitoring by a nurse, reduce the incidence of hospitalizations and emergency department (ED) presentations for people with chronic obstructive pulmonary disease (COPD). SUBJECTS AND METHODS: A randomized controlled trial was used to compare the outcomes for participants receiving the telehealth equipment and monitoring with those for participants in an information-only control group, over a period of 6 months. Participants receiving the telehealth intervention were taught to measure and record their vital signs (blood pressure, weight, temperature, pulse, and oxygen saturation levels) on a daily basis. These were then transmitted automatically via telephone to a secure Web site where they were monitored each day by the telehealth nurse. RESULTS: The telehealth group had fewer ED presentations and hospital admissions and a reduced length of stay in comparison with the control group. These results were not statistically significant. However, the reduction in health service use was large enough to result in significant cost savings, with the annual cost savings of the telehealth group compared with the control group being \$2,931 per person. CONCLUSIONS: Telehealth monitoring of patient vital signs reduced health service utilization for individuals with COPD and resulted in significant cost savings. In terms of individual health benefits, improvements in participants' self-management behaviors and control over their condition was evident.

Dear, B. F., et al. (2015). "Clinical and cost-effectiveness of therapist-guided internet-delivered cognitive behavior therapy for older adults with symptoms of anxiety: a randomized controlled trial." *Behav Ther* **46**(2): 206-217.

UNLABELLED: There is preliminary support for internet-delivered cognitive behaviour therapy (iCBT) as a way of improving access to treatment among older adults with anxiety. The aim of this randomized controlled trial (RCT) was to examine the efficacy, long-term outcomes, and cost-effectiveness of an iCBT program for adults over 60 years of age with anxiety. Successful applicants were randomly allocated to either the treatment group (n=35) or the waitlist control group (n=37). The online treatment course was delivered over 8 weeks and provided with brief weekly contact with a clinical psychologist via telephone or secure email. Eighty-four percent of participants completed the iCBT course within the 8 weeks and 90% provided data at posttreatment. Significantly lower scores on measures of anxiety (Cohen's $d=1.43$; 95% CI: 0.89 - 1.93) and depression (Cohen's $d=1.79$; 95% CI: 1.21 - 2.32) were found among the treatment group compared to the control group at posttreatment. These lower scores were maintained at 3-month and 12-month follow-up and the treatment group rated the iCBT treatment as acceptable. The treatment group had slightly higher costs (\$92.2; 95% CI: \$38.7 to \$149.2) and Quality-Adjusted Life-Years (QALYs=0.010; 95% CI: 0.003 to 0.018) than the control group at posttreatment and the intervention was found to have a greater than 95% probability of being cost-effective. The results support iCBT as an efficacious and cost-effective treatment option for older adults with symptoms of anxiety. TRIAL REGISTRATION: TRIAL REGISTRATION: Australian and New Zealand Clinical Trials Registry: ACTRN12611000929909; <https://www.anzctr.org.au/Trial/Registration/TrialReview.aspx?ACTRN=12611000929909>.

Demaerschalk, B. M., et al. (2013). "Cost utility of hub-and-spoke telestroke networks from societal perspective." *Am J Manag Care* **19**(12): 976-985.

BACKGROUND: A hub-and-spoke telestroke network is an effective way to extend quality emergency stroke care to remote hospitals and improve patient outcomes. OBJECTIVES: To evaluate the cost utility of a telestroke network in the management of acute ischemic stroke from the societal perspective. STUDY DESIGN AND METHODS: A lifetime Markov model was developed to compare the incremental costs and effectiveness of a telestroke network. One-year transition probabilities between the 3 health states based on the modified Rankin scale--minimal-to-no disability, moderate-to-severe disability, and death--were derived from literature. Costs included telemedicine setup and maintenance, initial and recurrent stroke treatment, rehabilitation, long-term care, and caregiver costs. Effectiveness was defined as quality-adjusted life-years (QALYs). Model inputs were obtained from the literature supplemented by data from Georgia Health Sciences University and Mayo Clinic. The base case network included 1 hub and 7 spokes, and assumed no survival benefits from acute treatment in a network. One-way sensitivity analyses were conducted. RESULTS: Compared with no network, patients treated in a telestroke network incurred \$1436 lower costs and gained 0.02 QALYs over a lifetime. Incremental costs decreased from \$444 for the first year to -\$1436 over a lifetime; incremental QALYs increased from 0.002 for the first year to 0.02 over a lifetime. Overall, results were robust in the 1-way sensitivity analyses. A telestroke network became less cost-effective with increasing spoke-to-hub transfer rates. CONCLUSIONS: A telestroke network is cost saving and more effective compared with no network from the societal perspective in most modeled scenarios.

Demiris, G. (2016). "Consumer Health Informatics: Past, Present, and Future of a Rapidly Evolving Domain." *Yearb Med Inform* **25**(Suppl. 1).

OBJECTIVES: Consumer Health Informatics (CHI) is a rapidly growing domain within the field of biomedical and health informatics. The objective of this paper is to reflect on the past twenty five years and showcase informatics concepts and applications that led to new models of care and patient empowerment, and to predict future trends and challenges for the next 25 years. METHODS: We discuss concepts and systems based on a review and analysis of published literature in the consumer health informatics domain in the last 25 years. RESULTS: The field was introduced with the vision that one day patients will be in charge of their own health care using informatics tools and systems. Scientific literature in the field originally focused on ways to assess the quality and validity of available printed health information, only to grow significantly to cover diverse areas such as online

communities, social media, and shared decision-making. Concepts such as home telehealth, mHealth, and the quantified-self movement, tools to address transparency of health care organizations, and personal health records and portals provided significant milestones in the field. CONCLUSION: Consumers are able to actively participate in the decision-making process and to engage in health care processes and decisions. However, challenges such as health literacy and the digital divide have hindered us from maximizing the potential of CHI tools with a significant portion of underserved populations unable to access and utilize them. At the same time, at a global scale consumer tools can increase access to care for underserved populations in developing countries. The field continues to grow and emerging movements such as precision medicine and the sharing economy will introduce new opportunities and challenges.

deShazo, R. D. et Parker, S. B. (2017). "Lessons Learned from Mississippi's Telehealth Approach to Health Disparities." *Am J Med* **130**(4): 403-408.

Many people see telemedicine as a solution to the nation's health disparities and in Mississippi as a solution to our last place in health. More than 13 years ago, the University of Mississippi Medical Center developed a successful TelEmergency program that saved rural Critical Access Hospitals and now provides telehealth services throughout the state. This occurred without acrimony because of partnerships that the University of Mississippi Medical Center developed with telecommunications companies, state government, health professions' licensure boards, and private donors. Today, the telemedicine market is exploding across the country with the entry of for-profit corporations into the medical market. These corporations often are more inclined to work with legislators rather than physicians, and some physician groups have attempted to limit their expansion. With the future of telemedicine now determined in part by the courts, rather than the providers, new pitfalls have arisen. The Mississippi experience may be helpful in navigating this new territory.

Deslich, S. et Coustasse, A. (2014). "Expanding technology in the ICU: the case for the utilization of telemedicine." *Telemed J E Health* **20**(5): 485-492.

INTRODUCTION: Telemedicine has been utilized in various healthcare areas to achieve better patient outcomes, lower costs of providing services, and increase patient access to care. Tele-intensive care unit (ICU) technology has been introduced as a way to provide effective ICU services to patients with reduced access, as well as to decrease costs and improve patient care. MATERIALS AND METHODS: The methodology for this qualitative study was a literature search and review of case studies. The search was limited to sources published in the last 10 years (2003-2013) in the English language. In total, 55 references were used for this research exploration inquiry. RESULTS: Tele-ICU was found to be an effective way to use technology to decrease costs of providing intensive care, while improving patient outcomes such as mortality and length of stay. Several case studies supported the use of telemedicine in ICUs to provide intensive care to patients who lived in rural areas and lacked access to traditional ICUs. Furthermore, it was noted that, although the initial costs for tele-ICU startup were significant, as much as \$100,000 per bed, the benefits of the utilization of this technology can offset those costs by reducing costs by 24% via decreased length of stay for patients. CONCLUSIONS: The findings of this study have suggested that the implementation of tele-ICU may have been more beneficial than costly, and it may have provided healthcare organizations the opportunity to increase quality of care and decrease mortality, while it might have decreased costs of delivering ICU services in both rural and urban areas.

Deslich, S. A., et al. (2013). "Telepsychiatry in correctional facilities: using technology to improve access and decrease costs of mental health care in underserved populations." *Perm J* **17**(3): 80-86.

OBJECTIVE: It is unclear if telepsychiatry, a subset of telemedicine, increases access to mental health care for inmates in correctional facilities or decreases costs for clinicians or facility administrators. The purpose of this investigation was to determine how utilization of telepsychiatry affected access to care and costs of providing mental health care in correctional facilities. METHODS: A literature review complemented by a semistructured interview with a telepsychiatry practitioner. Five electronic databases, the National Bureau of Justice, and the American Psychiatric Association Web sites were searched for this research, and 49 sources were referenced. The literature review examined

implementation of telepsychiatry in correctional facilities in Arizona, California, Georgia, Kansas, Ohio, Texas, and West Virginia to determine the effect of telepsychiatry on inmate access to mental health services and the costs of providing mental health care in correctional facilities. RESULTS: Telepsychiatry provided improved access to mental health services for inmates, and this increase in access is through the continuum of mental health care, which has been instrumental in increasing quality of care for inmates. Use of telepsychiatry saved correctional facilities from \$12,000 to more than \$1 million. The semistructured interview with the telepsychiatry practitioner supported utilization of telepsychiatry to increase access and lower costs of providing mental health care in correctional facilities. CONCLUSIONS: Increasing access to mental health care for this underserved group through telepsychiatry may improve living conditions and safety inside correctional facilities. Providers, facilities, and state and federal governments can expect increased savings with utilization of telepsychiatry.

Dharmar, M., et al. (2013). "The financial impact of a pediatric telemedicine program: a children's hospital's perspective." *Telemed J E Health* **19**(7): 502-508.

INTRODUCTION: This study evaluates the financial impact of telemedicine outreach in a competitive healthcare market from a tertiary children's hospital's perspective. We compared the number of transfers, average hospital revenue, and average professional billing revenue before and after the deployment of telemedicine. MATERIALS AND METHODS: This is a retrospective review of hospital and physician billing records for patients transferred from 16 hospitals where telemedicine services were implemented between July 2003 and December 2010. Hospital revenue was defined as total revenue minus operating costs. Professional billing revenue was defined as total payment received as the result of physician billing of patients' insurance. We compared the number of transfers, average net hospital revenue per year, and average professional billing revenue per year before and after the deployment of telemedicine at these hospitals. RESULTS: There were 2,029 children transferred to the children's hospital from the 16 hospitals with telemedicine during the study period. The average number of patients transferred per year to the children's hospital increased from 143 pre-telemedicine to 285 post-telemedicine. From these patients, the average hospital revenue increased from \$2.4 million to \$4.0 million per year, and the average professional billing revenue increased from \$313,977 to \$688,443 per year. On average, per hospital, following the deployment of telemedicine, hospital revenue increased by \$101,744 per year, and professional billing revenue increased by \$23,404 per year. CONCLUSIONS: In a competitive healthcare region with more than one children's hospital, deploying pediatric telemedicine services to referring hospitals resulted in an increased market share and an increased number of transfers, hospital revenue, and professional billing revenue.

Drummond, K. L., et al. (2017). "HIV patient and provider feedback on a telehealth collaborative care for depression intervention." *AIDS Care* **29**(3): 290-298.

In the HIV Translating Initiatives for Depression into Effective Solutions project, we conducted a randomized controlled effectiveness and implementation trial comparing depression collaborative care with enhanced usual care in Veterans Health Administration HIV clinics in the US. An offsite HIV depression care team including a psychiatrist, a depression care manager (DCM), and a clinical pharmacist provided collaborative care using a stepped-care model of treatment and made recommendations to providers through the electronic health record system. The DCM delivered care management to HIV patients through phone calls, performing routine assessments and providing counseling in self-management and problem-solving. The DCM documented all calls in each patient's electronic medical record. In this paper we present results from interviews conducted with patients and clinical staff in a multi-stage formative evaluation (FE). We conducted semi-structured FE interviews with 26 HIV patients and 30 clinical staff at the three participating sites during and after the trial period to gather their experiences and perspectives concerning the intervention components. Interviews were transcribed verbatim and analyzed using rapid content analysis techniques. Patients reported high satisfaction with the depression care manager (DCM) phone calls. Both HIV and mental health providers reported that the DCM's chart notes in the electronic health record were very helpful, and most felt that a dedicated DCM for HIV patients is ideal to meet patient needs. Sites encountered barriers to achieving and maintaining universal depression screening, but had greater

success when such screening was incorporated into routine intake processes. FE results demonstrated that depression care management via telehealth from an offsite team is acceptable and helpful to both HIV patients and their providers. Given that a centralized offsite depression care team can deliver effective, cost-effective, cost-saving services for multiple HIV clinics in different locations with high patient and provider satisfaction, broad implementation should be considered.

Dullet, N. W., et al. (2017). "Impact of a University-Based Outpatient Telemedicine Program on Time Savings, Travel Costs, and Environmental Pollutants." *Value Health* **20**(4): 542-546.

OBJECTIVE: The objective of this study was to estimate travel-related and environmental savings resulting from the use of telemedicine for outpatient specialty consultations with a university telemedicine program. **METHODS:** The study was designed to retrospectively analyze the telemedicine consultation database at the University of California Davis Health System (UCDHS) between July 1996 and December 2013. Travel distances and travel times were calculated between the patient home, the telemedicine clinic, and the UCDHS in-person clinic. Travel cost savings and environmental impact were calculated by determining differences in mileage reimbursement rate and emissions between those incurred in attending telemedicine appointments and those that would have been incurred if a visit to the hub site had been necessary. **RESULTS:** There were 19,246 consultations identified among 11,281 unique patients. Telemedicine visits resulted in a total travel distance savings of 5,345,602 miles, a total travel time savings of 4,708,891 minutes or 8.96 years, and a total direct travel cost savings of \$2,882,056. The mean per-consultation round-trip distance savings were 278 miles, average travel time savings were 245 minutes, and average cost savings were \$156. Telemedicine consultations resulted in a total emissions savings of 1969 metric tons of CO₂, 50 metric tons of CO, 3.7 metric tons of NO_x, and 5.5 metric tons of volatile organic compounds. **CONCLUSIONS:** This study demonstrates the positive impact of a health system's outpatient telemedicine program on patient travel time, patient travel costs, and environmental pollutants.

Effertz, G., et al. (2017). "Sustaining and Expanding Telehealth: A Survey of Business Models from Selected Prominent U.S. Telehealth Centers." *Telemed J E Health* **23**(2): 137-142.

INTRODUCTION: Telehealth centers across the country, including our own center, are addressing sustainability and best practice business models. We undertook this survey to explore the business models being used at other established telehealth centers. In the literature on telehealth and sustainability, there is a paucity of comparative studies as to how successful telehealth centers function. **METHODS:** In this study, we compared the business models of 10 successful telehealth centers. We conducted the study by interviewing key individuals at the centers, either through teleconference or telephone. **RESULTS:** We found that there are five general approaches to sustaining a telehealth center: grants, telehealth network membership fees, income from providing clinical services, per encounter charges, and operating as a cost center. We also found that most centers use more than one approach. **CONCLUSION:** We concluded that, although the first four approaches can contribute to the success of a center, telehealth centers are and should remain cost centers for their respective institutions.

Egede, L. E., et al. (2017). "Trajectory of cost overtime after psychotherapy for depression in older Veterans via telemedicine." *J Affect Disord* **207**: 157-162.

BACKGROUND: Little evidence exists regarding the costs of telemedicine, especially considering changes over time. This analysis aimed to analyze trajectory of healthcare cost before, during, and after a behavioral activation intervention delivered via telepsychology and same-room delivery to elderly Veterans with depression. **METHODS:** 241 participants were randomly assigned into one of two study groups: behavioral activation for depression via telemedicine or via same-room treatment. Patients received 8 weeks of weekly 60-min individual sessions of behavioral activation for depression. Primary outcomes were collected at 12-months. Inpatient, outpatient, pharmacy, and total costs were collected from VA Health Economics Resource Center (HERC) datasets for FY 1998-2014 and compared between the two treatment groups. Generalized mixed models were used to investigate the trajectories over time. **RESULTS:** Overall cost, as well as, outpatient and pharmacy cost show increasing trend over time. Unadjusted and adjusted trajectories over time for any cost were not

different between the two treatment groups. There was a significant overall increasing trend over time for outpatient ($p < 0.001$) and total cost ($p < 0.001$) but not for inpatient ($p = 0.543$) or pharmacy cost ($p = 0.084$). LIMITATIONS: Generalizability to younger, healthier populations may be limited due to inclusion criteria for study participants. CONCLUSION: Healthcare costs before, during, and after intervention did not differ between the telemedicine and in-person delivery methods. Outpatient costs accounted for most of the increasing trend of cost over time. These results support policies to use both telehealth and in-person treatment modalities to effectively and efficiently provide high quality care.

Ehrlich, A., et al. (2017). "Trends in dermatology practices and the implications for the workforce." J Am Acad Dermatol **77**(4): 746-752.

BACKGROUND: The American Academy of Dermatology (AAD) practice profile surveys have been conducted for more than a decade to gauge trends in our workforce supply and demand. OBJECTIVE: To update the trends and current workforce issues for the field of dermatology. METHODS: The AAD Practice Profile Survey is sent by both e-mail and postal mail to a random sample of practicing dermatologists who are AAD members. RESULTS: Shifts are noted in the primary practice setting; fewer dermatologists are in solo practice and more are in group practices than in previous years. Teledermatology use trended upward from 7% to 11% between 2012 and 2014. The implementation of electronic health records increased from 51% in 2011 to 70% in 2014. LIMITATIONS: There is potential for response bias and inaccurate self-reporting. Survey responses collected may not be representative of all geographic areas. CONCLUSION: The demand for dermatology services remains strong. Shifts in the practice setting may be related to increases in overhead costs that are partially associated with the implementation of technology-based medical records. Integration of electronic health records and utilization of telemedicine are increasing.

Elford, R., et al. (2000). "A randomized, controlled trial of child psychiatric assessments conducted using videoconferencing." Journal of Telemedicine and Telecare **6**(2): 73-82, 74 tabl., 72 fig.

Ellimoottil, C., An, L., Moyer, M., et al. (2018). "Challenges And Opportunities Faced By Large Health Systems Implementing Telehealth." Health Aff (Millwood) **37**(12): 1955-1959.

Executives at large health systems across the United States have an interest in developing or expanding telehealth programs. While interest is increasing, telehealth implementation teams (or e-health teams) often face challenges that can hinder the successful transition from pilot to full-scale implementation. Here we share lessons learned by four large health systems that have faced and largely surmounted these challenges. For e-health teams to successfully engage senior leaders in new telehealth initiatives, it is essential to align proposals with the strategic goals of the institution and use patient stories to highlight the benefits of telehealth. To manage the demand for telehealth offerings from patients and dozens of clinical departments, e-health teams should develop a framework for deciding what's most important. To get large medical staffs to adopt telehealth workflows, e-health teams should nurture telehealth champions at each staff level and incentivize them with career development opportunities and rewards. To enroll a heterogeneous population of patients in telehealth programs, e-health teams should use multiple methods of education to accommodate different learning styles. And finally, health systems should develop telehealth-specific outcome measures and repeatedly use them to motivate improvement.

Elliott, T., et al. (2017). "American College of Allergy, Asthma & Immunology Position Paper on the Use of Telemedicine for Allergists." Ann Allergy Asthma Immunol **119**(6): 512-517.

The integration of telecommunications and information systems in health care first began 4 decades ago with 500 patient consultations performed via interactive television. The use of telemedicine services and technology to deliver health care at a distance is increasing exponentially. Concomitant with this rapid expansion is the exciting ability to provide enhancements in quality and safety of care. Telemedicine enables increased access to care, improvement in health outcomes, reduction in medical costs, better resource use, expanded educational opportunities, and enhanced collaboration between patients and physicians. These potential benefits should be weighed against the risks and challenges of

using telemedicine. The American College of Allergy, Asthma, and Immunology advocates for incorporation of meaningful and sustained use of telemedicine in allergy and immunology practice. This article serves to offer policy and position statements of the use of telemedicine pertinent to the allergy and immunology subspecialty.

Ellis, I., et al. (2013). "Making a case for telehealth: measuring the carbon cost of health-related travel." Rural Remote Health **13**(4): 2723.

BACKGROUND: Telehealth services are promoted to reduce the cost of travel for people living in rural areas. The previous Australian Government, through the national Digital Economy Strategy, invested heavily in telehealth service development, at the same time introducing a carbon pricing mechanism. In planning a range of new telehealth services to a rural community the authors sought to quantify the travel conducted by people from one rural area in Australia to access health care, and to calculate the associated carbon emissions. METHODS: A population survey was conducted over a 1-week period of health-related travel events for the year 1 July 2011 to 30 June 2012 of all households on King Island, a community situated between the Australian mainland state of Victoria and the state of Tasmania. Validated emissions calculators were sourced from the Carbon Neutral website, including the vehicle and fuel use calculator and air travel carbon calculator, to calculate the total emissions associated with the fuel burned in tonnes of carbon dioxide equivalent (tCO₂e). RESULTS: Thirty nine percent of the population (625 participants) reported a total of 511 healthcare-related travel events. Participants travelled a total of 346 573 km and generated 0.22 tCO₂e per capita. Participants paid the cost of their own travel more than 70% of the time. CONCLUSIONS: Dependence on fossil fuels for transport in a carbon economy has a significant impact on total healthcare carbon emissions. Alternative models of care, such as telehealth, need be developed for an environmentally sustainable healthcare system for rural and remote areas.

Estai, M., et al. (2016). "Challenges in the uptake of telemedicine in dentistry." Rural Remote Health **16**(4): 3915.

With the availability of oral care services very unevenly distributed in rural or remote areas, underserved people seek oral care from non-dental care providers. Against this backdrop, and coupled with the decreasing cost of and innovations in technology, there is a growing interest in the adoption of telemedicine services. Regardless of the lack of good-quality evidence supporting the cost-effectiveness of telemedicine, evidence already indicates that telemedicine, even with extra costs, helps in reducing the inequalities in the provision of primary health care. Telemedicine has the potential to overcome geographical barriers and contribute to closing the rural-urban healthcare gap in Australia and many other regions. Although research examining different teledentistry applications has found that this technology can be successfully integrated into different settings, there is little active teledentistry practice in Australia. The integration of telemedicine into the mainstream oral health system is a complex and collaborative process in which numerous factors at individual, infrastructure and organisational levels are involved. Addressing the barriers that delay the implementation of a teledentistry service can provide valuable insights into its lack of acceptance and establish an evidence base that can help to inform future decisions about the benefits of teledentistry.

Fares, A. et Bernstein, D. A. (2016). "Organization of the Swiss model of primary care telemedicine. Is adoption by the French health system possible?" Techniques Hospitalières(758): 2 p.

La Fédération française de télémédecine présente un extrait d'article publié dans la revue *European Research in Telemedicine*, qui pourrait intéresser les lecteurs de *Techniques hospitalières* (voir le sommaire dans la "Description" ci-dessous). L'article présenté ici a été publié dans le numéro de mars 2016 par Asma Fares et David Nathan Bernstein, qui développent le modèle suisse de télémédecine de premier recours et suggèrent son adaptabilité à la France (Fares A, Bernstein DN. Organization of the Swiss model of primary care telemedicine: Is adoption by the French health system possible? *Eur Res Telemed.* 2016 Mar;5(1) :3–8. <http://dx.doi.org/10.1016/j.eurtel.2016.01.001>).

Ferguson, T. W., et al. (2015). "An Economic Assessment Model of Rural and Remote Satellite Hemodialysis Units." PLoS One **10**(8): e0135587.

BACKGROUND: Kidney Failure is epidemic in many remote communities in Canada. In-centre hemodialysis is provided within these settings in satellite hemodialysis units. The key cost drivers of this program have not been fully described. Such information is important in informing the design of programs aimed at optimizing efficiency in providing dialysis and preventative chronic kidney disease care in remote communities. **DESIGN, SETTING, PARTICIPANTS, AND MEASUREMENTS:** We constructed a cost model based on data derived from 16 of Manitoba, Canada's remote satellite units. We included all costs for operation of the unit, transportation, treatment, and capital costs. All costs were presented in 2013 Canadian dollars. **RESULTS:** The annual per-patient cost of providing hemodialysis in the satellite units ranged from \$80,372 to \$215,918 per patient, per year. The median per patient, per year cost was \$99,888 (IQR \$89,057-\$122,640). Primary cost drivers were capital costs related to construction, human resource expenses, and expenses for return to tertiary care centres for health care. Costs related to transport considerably increased estimates in units that required plane or helicopter transfers. **CONCLUSIONS:** Satellite hemodialysis units in remote areas are more expensive on a per-patient basis than hospital hemodialysis and satellite hemodialysis available in urban areas. In some rural, remote locations, better value for money may reside in local surveillance and prevention programs in addition support for home dialysis therapies over construction of new satellite hemodialysis units.

Finch, M., et al. (2017). "Reduced Healthcare Use and Apparent Savings with Passive Home Monitoring Technology: A Pilot Study." *J Am Geriatr Soc* **65**(6): 1301-1305.

OBJECTIVES: To conduct a cost analysis of ambient assisted living technology, which is promising for improving the ability of individuals and care providers to monitor daily activities and gain better awareness through proactive management of health and safety. **DESIGN:** Three-arm cohort study. **SETTING:** Homes of enrollees of a state-based healthcare plan for older adults. **PARTICIPANTS:** Enrollees dually eligible for Medicare and Medicaid (N = 268). **INTERVENTION:** Health and safety passive remote patient monitoring (PRPM) systems were installed in enrollees' homes (the intervention group) with monitoring and proactive intervention of a case manager when deviation from baseline subject behavior was detected. **MEASUREMENTS:** Claims data were collected over 12 months to assess healthcare use and costs in the intervention group and to compare use and costs with those of two control groups: a concurrent group of enrollees who declined the technology and a historical cohort matched on age to the participation group. **RESULTS:** Although the small sample size precluded cost differences that were statistically significant, the participant group used substantially less custodial care, emergency department (ED) services, inpatient stays, and ED costs than the two control groups. **CONCLUSION:** In this pilot study, the PRPM system was associated with apparent healthcare cost savings. Although more cost analyses are warranted, ambient assisted living technologies are a potentially valuable investment for older adult care.

Fitzner, K. K., et al. (2014). "Telehealth technologies: changing the way we deliver efficacious and cost-effective diabetes self-management education." *J Health Care Poor Underserved* **25**(4): 1853-1897.

Nearly 26 million people diagnosed with diabetes mellitus in the U.S. must actively engage in self-management of the disease. Telehealth is a population-based approach with the potential to optimize resources and increase access to diabetes self-management education/training (DSME/T). We conducted a systematic literature review on diabetes education and telehealth (2009-April 2014) to determine whether remote DSME/T sufficiently improves behavioral, clinical, and economic outcomes and access. Twenty-five out of 213 identified systematic literature reviews or meta-analyses (two on mobile health were identified via a Google search) met our criteria and were fully reviewed; 22 additional studies and reports of diabetes-related technologies and interventions were also identified. Telemedicine has the potential to offer great utility, but guidelines for high research standards must be introduced, adopted, and proactively refined to determine the strengths of this technology for DSME/T, behavioral change, cost-effective care, and improved access in chronic disease self-management.

Fogel, A. L. et Teng, J. M. (2015). "Pediatric teledermatology: a survey of usage, perspectives, and practice." *Pediatr Dermatol* **32**(3): 363-368.

Pediatric dermatology is one of the smallest subspecialties, and expanding the availability of care is of great interest. Tele dermatology has been proposed as a way to expand access and improve care delivery, but no current assessment of pediatric tele dermatology exists. The objective of the current study was to assess usage and perspectives on pediatric tele dermatology. Surveys were distributed electronically to all 226 board-certified U.S. pediatric dermatologists; 44% (100/226) responded. Nearly all respondents (89%) have experience with tele dermatology. Formal tele dermatology reimbursement success rates have increased to 35%. Respondents were positive about tele dermatology's present and future prospects, and 41% want to use tele dermatology more often, although they viewed tele dermatology as somewhat inferior to in-person care regarding accuracy of diagnosis and appropriation of management plans. Significant differences were found between formal tele dermatology users and nonusers in salary structure, practice environment, sex, and region. Substantial increases in pediatric tele dermatology have occurred in the last 5 to 10 years, and there remains cause for optimism for tele dermatology's future. Concerns about diagnostic confidence and care quality indicate that tele dermatology may be best for care of patients with characteristic clinical presentations or management of patients with established diagnoses.

Fortis, S., et al. (2014). "A health system-based critical care program with a novel tele-ICU: implementation, cost, and structure details." *J Am Coll Surg* **219**(4): 676-683.

BACKGROUND: Improving the efficiency of critical care service is needed as the shortfall of intensivists is increasing. Standardizing clinical practice, telemedicine, and organizing critical care service at a health system level improves outcomes. We developed a health system Critical Care Program based at an academic medical center. The main feature of our program is an intensivist who shares on-site and telemedicine clinical responsibilities. Tele-ICU facilitates the standardization of high-quality critical care across the system. A common electronic medical record made the communications among the ICUs feasible. Combining faculty from medical and surgical critical care divisions increased the productivity of intensivists. STUDY DESIGN: We retrospectively reviewed the administrative database data from 2011 and 2012, including mean census, number of transfers, age, sex, case mix index, mortality, readmissions, and financial data. RESULTS: The Critical Care program has 106 adult ICU beds; 54 of those beds can be managed remotely using tele-ICU based at the main University hospital. The mean midnight census of the system for 2012 was 69.44 and total patient-days were 34,406. The capital cost of the tele-ICU was \$1,186,220. The annual operational cost is \$1,250,112 or \$23,150 per monitored ICU-bed. Unadjusted mortality was 6.5% before and 4.9% after implementation ($p < 0.0002$). CONCLUSIONS: We describe a novel health system level ICU program built using "off the shelf" technology based on a large University medical center and a tele-ICU with a full degree of treatment authority across the system.

Fraiche, A. M., et al. (2017). "Moving Beyond the Walls of the Clinic: Opportunities and Challenges to the Future of Telehealth in Heart Failure." *JACC Heart Fail* **5**(4): 297-304.

Telehealth offers an innovative approach to improve heart failure care that expands beyond traditional management strategies. Yet the use of telehealth in heart failure is infrequent because of several obstacles. Fundamentally, the evidence is inconsistent across studies of telehealth interventions in heart failure, which limits the ability of cardiologists to make general conclusions. Where encouraging evidence exists, there are logistical challenges to broad-scale implementation as a result of insufficient understanding of how to transform telemedicine strategies into clinical practice effectively. Ultimately, when implementation is reasonable, the application of these efforts remains hampered by regulatory, reimbursement, and other policy issues. The primary aim of this paper is to describe these challenges and to outline a path forward to apply telehealth approaches to heart failure in conjunction with payment reform and pragmatic research study design.

Frilling, S. (2017). "Medicare Telehealth Services and Nephrology: Policies for Eligibility and Payment." *Adv Chronic Kidney Dis* **24**(1): 46-50.

The criteria for Medicare payment of telehealth nephrology services, and all other Medicare telehealth services, are set forth in section 1834(m) of the Social Security Act. There are just over 80

professional physician or practitioner services that may be furnished via telehealth and paid under Medicare Part B, when an interactive audio and video telecommunication system that permits real-time communication between a beneficiary at the originating site and the physician or practitioner at the distant site substitutes for an in-person encounter. These services include 16 nephrology billing codes for furnishing ESRD services for monthly monitoring and assessment and two billing codes for chronic kidney disease education. In recent years, many mobile health devices and other web-based tools have been developed in support of monitoring, observation, and collaboration for people living with chronic disease. This article reviews the statutory and program guidance that governs Medicare telehealth services, defines payment policy terms (e.g., originating site and distant site), and explains payment policies when telehealth services are furnished.

Frueh, B. C., et al. (2000). "Procedural and methodological issues in telepsychiatry research and program development." *Psychiatric Services* **51**(12): 1522-1527.

Gabriel, M. H., et al. (2014). "Progress and challenges: implementation and use of health information technology among critical-access hospitals." *Health Aff (Millwood)* **33**(7): 1262-1270.

Despite major national investments to support the adoption of health information technology (IT), concerns persist that barriers are inhibiting that adoption and the use of advanced health IT capabilities in rural areas in particular. Using a survey of Medicare-certified critical-access hospitals, we examined electronic health record (EHR) adoption, key EHR functionalities, telehealth, and teleradiology, as well as challenges to EHR adoption. In 2013, 89 percent of critical-access hospitals had implemented a full or partial EHR. Adoption of key EHR capabilities varied. Critical-access hospitals that had certain types of technical assistance and resources available to support health IT were more likely to have adopted health IT capabilities and less likely to report significant challenges to EHR implementation and use, compared to other hospitals in the survey. It is important to ensure that the necessary resources and support are available to critical-access hospitals, especially those that operate independently, to assist them in adopting health IT and becoming able to electronically link to the broader health care system.

Gelber, H. et Alexander, M. (1999). "An evaluation of an Australian videoconferencing project for child and adolescent telepsychiatry." *Journal of Telemedicine and Telecare* **5**(suppl. 1): S21-S23, 21 fig.

Giambrone, D., et al. (2014). "Obstacles hindering the mainstream practice of teledermatopathology." *J Am Acad Dermatol* **71**(4): 772-780.

BACKGROUND: Teledermatopathology has the potential to link underserved areas to experts across the country and assist in making quick diagnoses, which may improve health care costs and delivery. Despite these potential benefits, teledermatopathology is not used routinely for primary diagnosis in the United States. **OBJECTIVE:** To assess the current status of and address the potential for improving health care by the use of teledermatopathology for primary diagnosis. **METHODS:** Current available literature and online resources were reviewed to address 3 major variables that hinder the widespread use of teledermatopathology: diagnostic accuracy, licensure requirements, and reimbursement. **RESULTS:** Recent studies show similar diagnostic accuracy for this technology compared to conventional microscopy. State-to-state variation and ambiguity in laws serve as the biggest hurdles to the widespread use of teledermatopathology. More states are recognizing the importance of the implementation of specific laws regarding telemedicine. More studies are required to evaluate the systems that offer specific telemedicine licenses, in addition to those that pay for telemedicine services specifically. **LIMITATIONS:** This study reviewed current legislation concerning teledermatopathology; these laws are subject to revision. **CONCLUSION:** Improving diagnostic accuracy and limiting variations in policy and reimbursement may encourage more pathologists to use teledermatopathology technology.

Gilman, M. et Stensland, J. (2013). "Telehealth and Medicare: payment policy, current use, and prospects for growth." *Medicare Medicaid Res Rev* **3**(4).

OBJECTIVE: Evaluate the growth in various types of Medicare-paid telehealth services. **BACKGROUND:** There has been a long-standing hope that telehealth could be used to reduce rural patients' travel times to specialty physicians. Medicare covers telehealth services provided through live, interactive videoconferencing between a beneficiary located at a certified rural site and a distant practitioner. **METHODS:** We analyzed 100% of telehealth Medicare claims for 2009 matched to individual patient ZIP codes and individual provider characteristics. **RESULTS:** Despite increases in Medicare payment rates for telehealth services, expansions of covered services, reductions in provider requirements, and provisions of federal grants to encourage telehealth, growth in adoption of telehealth among providers has been modest. Medicare claims indicate that only 369 providers had 10 or more Medicare telehealth consultations in 2009. Roughly half of the 369 were mental health professionals, and about one-in-five of the 369 were non-physician professionals (e.g., physician assistants and nurse practitioners). On balance, the strong areas of telehealth are mental health and, surprisingly, nonphysician professionals. The comparative advantage of mental health could be the verbal (rather than physical contact) nature of mental health care, and the comparative advantage of non-physician professionals could be their lower labor costs.

Gilmore, L. A., et al. (2017). "Personalized Mobile Health Intervention for Health and Weight Loss in Postpartum Women Receiving Women, Infants, and Children Benefit: A Randomized Controlled Pilot Study." *J Womens Health (Larchmt)* **26**(7): 719-727.

BACKGROUND: Prepregnancy maternal obesity and excessive weight gain during pregnancy lead to significant morbidities in mothers and their children. Mothers who never return to their prepregnancy weight begin subsequent pregnancies at a greater weight and have a larger propensity for excess gestational weight gain and postpartum weight retention. **METHODS:** In this pilot study, 40 postpartum women credentialed to receive postpartum women, infants, and children (WIC) service were randomized to usual care ("WIC Moms") or a personalized health intervention delivered via a SmartPhone ("E-Moms"). Assessments, including body weight, vital signs, circumferences, and body composition, were completed at week 0 (6-8 weeks postpartum), week 8, and week 16. **RESULTS:** Results are presented as change from week 0 at 16. As per the completers analysis, body weight change was not different between the groups (WIC Moms vs. E-Moms; 1.8 +/- 0.9 vs. -0.1 +/- 0.9 kg; p = 0.10), neither was the change in percent body fat (1.7 +/- 0.6 vs. 0.1% +/- 0.6%; p = 0.90) or waist/hip ratio (-0.01 +/- 0.01 vs. -0.02 +/- 0.01 cm; p = 0.60). However, due to notable variability in intervention adherence as the study progressed, participants were classified post hoc as having low (<40% adherence), medium (40%-70% adherence), or high adherence (>70% adherence). Participants with high intervention adherence (n = 5) had a significant reduction in body weight (-3.6 +/- 1.6 vs. 1.8 +/- 0.9 kg; p = 0.005) and percent body fat (-2.5 +/- 1.0 vs. 1.7% +/- 0.6%; p = 0.001) when compared to WIC Moms. **CONCLUSIONS:** Overall, the E-Moms intervention was not able to decrease postpartum weight retention in women receiving WIC benefits compared to usual care received through the current WIC program. However, there is some evidence to suggest improved adherence to the intervention would improve weight management.

Givertz, M. M., et al. (2017). "Pulmonary Artery Pressure-Guided Management of Patients With Heart Failure and Reduced Ejection Fraction." *J Am Coll Cardiol* **70**(15): 1875-1886.

BACKGROUND: Despite increased use of guideline-directed medical therapy (GDMT), some patients with heart failure and reduced ejection fraction (HFrEF) remain at high risk for hospitalization and mortality. Remote monitoring of pulmonary artery (PA) pressures provides clinicians with actionable information to help further optimize medications and improve outcomes. **OBJECTIVES:** CHAMPION (CardioMEMS Heart Sensor Allows Monitoring of Pressure to Improve Outcomes in NYHA Class III Heart Failure Patients trial) analyzed PA pressure-guided heart failure (HF) management in patients with HFrEF based on their ability to tolerate GDMT. **METHODS:** CHAMPION enrolled 550 patients with chronic HF regardless of left ventricular ejection fraction. A pre-specified sub-group analysis compared HF hospitalization and mortality rates between treatment and control groups in HFrEF patients (left ventricular ejection fraction \leq 40%). Post hoc analyses in patients who tolerated GDMT were also performed. Hospitalizations and mortality were assessed using Andersen-Gill and Cox proportional hazards models. **RESULTS:** In 456 patients with HFrEF, HF hospitalization rates were 28% lower in the treatment group than in the control group (hazard ratio [HR]: 0.72; 95% confidence interval [CI]: 0.59

to 0.88; $p = 0.0013$), with a strong trend for 32% lower mortality (HR: 0.68; 95% CI: 0.45 to 1.02; $p = 0.06$). A 445-patient subset received at least 1 GDMT (angiotensin-converting enzyme inhibitor/angiotensin receptor blocker, or beta-blocker) at baseline; these patients had 33% lower HF hospitalization rates (HR: 0.67; 95% CI: 0.54 to 0.82; $p = 0.0002$) and 47% lower mortality (HR: 0.63; 95% CI: 0.41 to 0.96, $p = 0.0293$) than controls. Compared with controls, patients receiving both components of optimal GDMT ($n = 337$) had 43% lower HF hospitalizations (HR: 0.57; 95% CI: 0.45 to 0.74; $p < 0.0001$) and 57% lower mortality (HR: 0.43; 95% CI: 0.24 to 0.76; $p = 0.0026$). CONCLUSIONS: PA pressure-guided HF management reduces morbidity and mortality in patients with HFREF on GDMT, underscoring the important synergy of addressing hemodynamic and neurohormonal targets of HF therapy. (CardioMEMS Heart Sensor Allows Monitoring of Pressure to Improve Outcomes in NYHA Class III Heart Failure Patients [CHAMPION]; NCT00531661).

Gokalp, H. et Clarke, M. (2013). "Monitoring activities of daily living of the elderly and the potential for its use in telecare and telehealth: a review." *Telemed J E Health* **19**(12): 910-923.

OBJECTIVE: This review was designed to determine whether telemonitoring activities of daily living (ADL) of elderly people can improve quality of life and be beneficial to their healthcare. MATERIALS AND METHODS: Electronic databases were searched for studies that monitored ADL of elderly people and preferably measured some clinical outcomes such as ability to predict key events that require intervention and for studies that assessed perception of elderly people of such telemonitoring systems. The articles were reviewed and assessed independently by two reviewers. RESULTS: One hundred seventy-five unique studies were found. Sixty-seven of these were identified for potential inclusion, and 25 studies were finally included. Study characteristics, parameters monitored, outcomes, and problems encountered were summarized and discussed. The main focus was on the potential benefits of ADL monitoring on the care of elderly people. CONCLUSIONS: Although most studies reported on technical improvements in methods for detecting changes in ADL, few, if any, determined the benefits to the patient of telemonitoring for changes in ADL or correlation with any physiological changes. We propose sensor and system characteristics for improved user acceptance and deployment in a large-scale care plan. We present areas requiring further investigation.

Grabowski, D. C. et O'Malley, A. J. (2014). "Use of telemedicine can reduce hospitalizations of nursing home residents and generate savings for medicare." *Health Aff (Millwood)* **33**(2): 244-250.

Hospitalizations of nursing home residents are frequent and result in complications, morbidity, and Medicare expenditures of more than a billion dollars annually. The lack of a physician presence at many nursing homes during off hours might contribute to inappropriate hospitalizations. Findings from our controlled study of eleven nursing homes provide the first indications that switching from on-call to telemedicine physician coverage during off hours could reduce hospitalizations and therefore generate cost savings to Medicare in excess of the facility's investment in the service. But those savings were evident only at the study nursing homes that used the telemedicine service to a greater extent, compared to the other study facilities. Telemedicine service providers and nursing home leaders might need to take additional steps to encourage buy-in to the use of telemedicine at facilities with such services. At the same time, closer alignment of the stakeholders that bear the costs of telemedicine and those that might realize savings because of its use could offer further incentives for the adoption of telemedicine.

Graven, M., et al. (2013). "Decline in mortality with the Belize Integrated Patient-Centred Country Wide Health Information System (BHIS) with embedded program management." *Int J Med Inform* **82**(10): 954-963.

BACKGROUND: Belize deployed a country-wide fully integrated patient centred health information system with eight embedded disease management algorithms and simple analytics in 2007 for \$4 (Cad)/citizen. OBJECTIVES: This study evaluated BHIS uptake by health care workers, and pre and post BHIS deployment mortality in selected areas and public health care expenditures. METHODS: BHIS encounter data were compared to encounter data from required Ministry of Health reports from licensed health care entities. De-identified vital statistics death data for the eight BHIS protocol disease domains and three non-protocol domains were compared from 2005 to 2011. Belize population data came from the Statistical Institute of Belize (2005-2009) and from Belize census

(2010) and estimate (2011). Public health system expenditures were compared by fiscal years (2000-2012). RESULTS: BHIS captured over 90% healthcare encounters by year one, 95% by year two. Mortality rates decreased in the eight BHIS protocol domains (each 2005 vs. 2011, all $p < 0.02$) vs. an increase or little change in the three domains without protocols. Hypertension related deaths dropped from 1st cause of death in 2003 to 9th by 2010. Public expenditures on healthcare steadily rose until 2009 but then declined slightly for the next 3 years. CONCLUSION: For modest investment, BHIS was well accepted nationwide and following deployment, mortality in the eight BHIS disease management algorithm domains declined significantly and expenditures on public healthcare stabilized.

Gray, J. E., et al. (2000). "Baby CareLink : using the internet and telemedicine to improve care for high-risk infants." *Pediatrics* **106**(6): 1318-1324, 1313 tabl., 1313 fig.

Gururajan, R. et Hafeez-Baig, A. (2014). "An empirical study to determine factors that motivate and limit the implementation of ICT in healthcare environments." *BMC Med Inform Decis Mak* **14**: 98.

BACKGROUND: The maturity and usage of wireless technology has influenced health services, and this has raised expectations from users that healthcare services will become more affordable due to technology growth. There is increasing evidence to justify this expectation, as telehealth is becoming more and more prevalent in many countries. Thus, health services are now offered beyond the boundaries of traditional hospitals, giving rise to many external factors dictating their quality. This has led us to investigate the factors that motivate and limit the implementation of ICT applications in the healthcare domain. METHODS: We used a mixed method approach with the qualitative aspects leading the quantitative aspects. The main reason for this approach was to understand and explore the domain through the qualitative aspects as we could be part of the discussion. Then we conducted a quantitative survey to extract more responses in order to justify the claims explored in the qualitative process. RESULTS: We found that there are a number of internal and external factors influencing ICT adoption in the healthcare environment so that services can be provided via ICT tools. These factors were grouped under factors contributing to improved outcomes, efficiency and the management of technology. We conceptualised that these three groups of factors drive ICT implementation to assure health services. CONCLUSIONS: The main lesson learned from this research was that Information Systems discipline needs to urgently consider health informatics as a serious growth area. We also found that as IS researchers, we need to 'mix' with the health environment in order to understand the environment and then develop suitable methods to answer posited research questions.

Herendeen, N. et Deshpande, P. (2014). "Telemedicine and the patient-centered medical home." *Pediatr Ann* **43**(2): e28-32.

Imagine an environment where health care coordination is seamless; where the pediatricians and their care teams could significantly reduce the time it takes to communicate and transfer the information between physicians, patients, and their families. Imagine a situation where unnecessary referrals and investigations are avoided, saving costs and anxieties for the patients. Welcome to the world of telemedicine and a patient-centered medical home (PCMH). Comprehensive health care delivered in the most efficient manner with the least expense is the cornerstone of these concepts. The concept of PCMH was first introduced in 1967 by the American Academy of Pediatrics (AAP) Council on Pediatric Practice in the book, *Standards of Child Health Care*. The medical home concept originally referred to one central source of medical records for children with special health care needs. During the past 4 decades, this concept has transformed beyond data entry to methods of delivering the best quality of care for all children. In 2007, a joint statement by the AAP, the American Academy of Family Physicians, the American College of Physicians, and the American Osteopathic Association endorsed the PCMH concept.

Hilt, R. J., et al. (2015). "A Statewide Child Telepsychiatry Consult System Yields Desired Health System Changes and Savings." *Telemed J E Health* **21**(7): 533-537.

BACKGROUND: Telepsychiatry has clinical efficacy with children, but questions remain about cost-effectiveness. State agencies and health systems need to know if a child telepsychiatry consult system

can address system concerns and improve care quality while lowering costs. MATERIALS AND METHODS: To assist care in a rural state with few child and adolescent psychiatrists, an academic center coordinated a consult system of (1) televideo consults for high-needs children with Medicaid and state Multidisciplinary Team (MDT)/foster care involvement, (2) remote medication reviews for beyond guidelines prescribing, and (3) elective community provider telephone-based consults. Consult service data were collected and analyzed with Wyoming's Medicaid and Foster Care Divisions between the program start in January 2011 until March 2013. RESULTS: There were 229 televideo MDT/foster care consults, 125 mandatory medication reviews, and 277 elective phone consultations supporting community providers during this period. Following implementation, the number of Medicaid children ≤ 5 years of age using psychotropic medications decreased by 42% ($p < 0.001$), and the number of children using psychotropic doses $> 150\%$ of the Food and Drug Administration maximum decreased by 52% ($p < 0.001$). Televideo consults redirected 60% of children slated by caseworkers for a psychiatric residential treatment facility admission into alternative community treatment and placements. A financial return on investment was 1.82 to 1 for combined services. CONCLUSIONS: This coordinated child telepsychiatry consult system for a state Medicaid division reduced outlier pediatric psychiatric medication prescribing, supported local community-delivered treatments, and reduced unnecessary hospitalizations in a financially advantageous manner that was well received by the practice community.

Hitt, W. C., et al. (2013). "Telemedical cervical cancer screening to bridge medicaid service care gap for rural women." Telemed J E Health **19**(5): 403-408.

BACKGROUND: The Arkansas Medicaid program for low-income women provides cervical cancer screening, in the form of Pap smears, and treatment but no diagnostic means of bridging the two, such as a procedure called "colposcopy." Telemedicine offers a viable means to bridging this gap. Previously telecolposcopy has been used in small demonstration projects as a means to deliver colposcopy services to at-risk rural populations at a comparable quality to in-person colposcopy. SUBJECTS AND METHODS: The University of Arkansas for Medical Sciences' Antenatal & Neonatal Guidelines, Education and Learning System Program and Center for Distance Health developed an innovative collaborative telemedicine pilot program with the Arkansas Department of Health that used both specialty physician oversight and nurse examiners. Underserved rural patients from the Department of Health were provided with colposcopy services via interactive telemedicine at four separate spoke sites. During each weekly 3-h clinic, an advanced practice nurse/nurse practitioner at each of the spoke sites performed the exams and collected biopsy specimens under the real-time, interactive supervision of an experienced faculty member at the hub site. RESULTS: Between January 1, 2010 and June 21, 2011, the program scheduled 1,812 visits, involving 1,504 unduplicated patient referrals from 68 of Arkansas's 75 counties, and performed 1,298 telecolposcopic exams. CONCLUSIONS: This project provides complex specialty gynecological services using telemedicine technology to overcome geographic barriers to care while producing results comparable to traditional examinations. It is cost-effective and well received by patients and can be used as a model for improving access to care among vulnerable populations.

Hoban, M. B., et al. (2013). "The effect of telemonitoring at home on quality of life and self-care behaviors of patients with heart failure." Home Healthc Nurse **31**(7): 368-377.

Heart failure (HF) is a costly chronic disease that affects 5.7 million people in the United States. Home healthcare agencies are implementing initiatives to reduce hospitalizations and manage HF patients at home. In this study, telemonitoring improved patients' perception of their quality of life and assisted them to sustain critical self-care behaviors. Patients who were monitored had fewer hospitalizations but telemonitoring was not statistically significant in lowering hospitalizations.

Hommel, K. A., et al. (2013). "Telehealth behavioral treatment for medication nonadherence: a pilot and feasibility study." Eur J Gastroenterol Hepatol **25**(4): 469-473.

OBJECTIVE: To evaluate an individually tailored multicomponent nonadherence treatment protocol using a telehealth delivery approach in adolescents with inflammatory bowel disease. METHODS: Nine participants, age 13.71 ± 1.35 years, completed a brief treatment online through Skype. Medication

nonadherence, severity of disease, and feasibility/acceptability data were obtained. RESULTS: Adherence increased markedly from 62% at baseline to 91% for mesalamine ($\Delta=0.63$), but decreased slightly from 61% at baseline to 53% for 6-mercaptopurine /azathioprine. The telehealth delivery approach resulted in cost savings of \$100 in mileage and 4 h of travel time/patient. Treatment session attendance was 100%, and the intervention was rated as acceptable, particularly in terms of treatment convenience. CONCLUSION: Individually tailored treatment of nonadherence through telehealth delivery is feasible and acceptable. This treatment shows promise for clinical efficacy to improve medication adherence and reduce costs. Large-scale testing is necessary to determine the impact of this intervention on adherence and health outcomes.

Hooshmand, M. et Yao, K. (2017). "Challenges Facing Children with Special Healthcare Needs and Their Families: Telemedicine as a Bridge to Care." Telemed J E Health **23**(1): 18-24.

Telemedicine is an increasingly utilized mode of healthcare delivery, which improves access to care for vulnerable populations. Children with Special Healthcare Needs (CSHCN) and their families face significant challenges, such as geographic, financial, and sociocultural barriers, in accessing needed healthcare services. The literature supports telemedicine as an effective accepted bridge between CSHCN and their providers. A growing body of telemedicine projects also suggests cost-effectiveness when considering the direct and indirect costs the families of CSHCN incur in seeking healthcare services. These new systems of care should prioritize caring and family centeredness while reducing the burdens of CSHCN and their families.

Horn, B. P., et al. (2016). "A cost comparison of travel models and behavioural telemedicine for rural, Native American populations in New Mexico." J Telemed Telecare **22**(1): 47-55.

OBJECTIVE: The purpose of this study was to model the cost of delivering behavioural health services to rural Native American populations using telecommunications and compare these costs with the travel costs associated with providing equivalent care. METHODS: Behavioural telehealth costs were modelled using equipment, transmission, administrative and IT costs from an established telecommunications centre. Two types of travel models were estimated: a patient travel model and a physician travel model. These costs were modelled using the New Mexico resource geographic information system program (RGIS) and ArcGIS software and unit costs (e.g. fuel prices, vehicle depreciation, lodging, physician wages, and patient wages) that were obtained from the literature and US government agencies. RESULTS: The average per-patient cost of providing behavioural healthcare via telehealth was US\$138.34, and the average per-patient travel cost was US\$169.76 for physicians and US\$333.52 for patients. Sensitivity analysis found these results to be rather robust to changes in imputed parameters and preliminary evidence of economies of scale was found. CONCLUSION: Besides the obvious benefits of increased access to healthcare and reduced health disparities, providing behavioural telehealth for rural Native American populations was estimated to be less costly than modelled equivalent care provided by travelling. Additionally, as administrative and coordination costs are a major component of telehealth costs, as programmes grow to serve more patients, the relative costs of these initial infrastructure as well as overall per-patient costs should decrease.

Hunter, T. B., et al. (2013). "Factors in the selection of a teleradiology provider in the United States." J Telemed Telecare **19**(6): 354-359.

Commercial teleradiology is well established in the US. There are many factors to consider when engaging a teleradiology provider. One of the basic questions is what do you expect to gain from it? Do you want a final reading from an attending radiologist (known as a consultant radiologist in many countries) or would you be satisfied with a preliminary reading from a teleradiology provider and a final reading from your own in-house radiologist the following day? Do you simply require after-hours coverage or do you need to supplement the coverage provided by your own internal radiologists during normal working hours? Teleradiology is not without its drawbacks. It can add additional costs, particularly for after-hours coverage. Teleradiology rarely provides in-house coverage for procedures, and the interpreting radiologist may sometimes be difficult to contact for consultation. Choosing a teleradiology vendor requires due diligence. When the contracting entity defines its expectations well

and chooses its teleradiology vendor with care, the end result will be satisfactory for all concerned, including the patients.

Hyman, J. L., et al. (2012). "Online professional networks for physicians: risk management." Clin Orthop Relat Res **470**(5): 1386-1392.

BACKGROUND: The rapidly developing array of online physician-only communities represents a potential extraordinary advance in the availability of educational and informational resources to physicians. These online communities provide physicians with a new range of controls over the information they process, but use of this social media technology carries some risk.

QUESTIONS/PURPOSES: The purpose of this review was to help physicians manage the risks of online professional networking and discuss the potential benefits that may come with such networks. This article explores the risks and benefits of physicians engaging in online professional networking with peers and provides suggestions on risk management. **METHODS:** Through an Internet search and literature review, we scrutinized available case law, federal regulatory code, and guidelines of conduct from professional organizations and consultants. We reviewed the OrthoMind.com site as a case example because it is currently the only online social network exclusively for orthopaedic surgeons. **RESULTS:** Existing case law suggests potential liability for orthopaedic surgeons who engage with patients on openly accessible social network platforms. Current society guidelines in both the United States and Britain provide sensible rules that may mitigate such risks. However, the overall lack of a strong body of legal opinions, government regulations as well as practical experience for most surgeons limit the suitability of such platforms. Closed platforms that are restricted to validated orthopaedic surgeons may limit these downside risks and hence allow surgeons to collaborate with one another both as clinicians and practice owners. **CONCLUSIONS:** Educating surgeons about the pros and cons of participating in these networking platforms is helping them more astutely manage risks and optimize benefits. This evolving online environment of professional interaction is one of few precedents, but the application of risk management strategies that physicians use in daily practice carries over into the online community. This participation should foster ongoing dialogue as new guidelines emerge. This will allow today's orthopaedic surgeon to feel more comfortable with online professional networks and better understand how to make an informed decision regarding their proper use.

Jackson, B. D., et al. (2016). "EHealth Technologies in Inflammatory Bowel Disease: A Systematic Review." J Crohns Colitis **10**(9): 1103-1121.

BACKGROUND AND AIMS: Electronic-health technologies (eHealth) such as Web-based interventions, virtual clinics, smart-phone applications, and telemedicine are being used to manage patients with inflammatory bowel disease (IBD). We aimed to: (1) Evaluate the impact of eHealth technologies on conventional clinical indices and patient-reported outcome measures (PROs) in IBD; (2) assess the effectiveness, cost-effectiveness and feasibility of using eHealth technologies to facilitate the self-management of individuals with IBD, and; (3) provide recommendations for their design and optimal use for patient care. **METHODS:** Relevant publications were identified via a literature search, and 17 publications were selected based on predefined quality parameters. **RESULTS:** Six randomized controlled trials and nine observational studies utilizing eHealth technologies in IBD were identified. Compared with standard outpatient-led care, eHealth technologies have led to improvements in: Relapse duration [(n = 1) 18 days vs 77 days, p < 0.001]; disease activity (n = 2); short-term medication adherence (n = 3); quality of life (n = 4); IBD knowledge (n = 2); healthcare costs (n = 4); the number of acute visits to the outpatient clinic due to IBD symptoms (n = 1), and; facilitating the remote management of up to 20% of an IBD cohort (n = 2). Methodological shortcomings of eHealth studies include heterogeneity of outcome measures, lack of clinician/patient input, lack of validation against conventional clinical indices and PROs, and limited cost-benefit analyses. **CONCLUSIONS:** EHealth technologies have the potential for promoting self-management and reducing the impact of the growing burden of IBD on health care resource utilization. A theoretical framework should be applied to the development, implementation, and evaluation of eHealth interventions.

Jean, C., Duong, T.-A., Stal-Le Cardinal, J., et al. (2016). "Sharing economic value between the stakeholders of a telehealth project: methodological issues?" European Research in Telemedicine / La Recherche Européenne en Télémedecine 5(2): 37-44.

<https://hal.archives-ouvertes.fr/hal-01358709>

Introduction : La pérennité des projets de télémedecine est trop souvent remise en cause par l'absence de développement préalable de modèles économiques durables qui permettraient d'élaborer de nouvelles organisations à même d'équilibrer le financement de leur déploiement et de leur fonctionnement. Les méthodes d'évaluation médico-économiques et les méthodes multicritères existantes ne permettant pas de répondre à cette problématique, une nouvelle méthode est donc nécessaire. Matériels et Méthodes : Les outils d'analyse des systèmes complexes utilisés dans le domaine du Génie Industriel sont mobilisés pour créer cette méthode. La perspective holiste adoptée est l'occasion d'élaborer des modèles économiques plus durables pour chacun des acteurs d'un projet de télémedecine. Résultats : La méthode proposée permet de créer des scenarii variés de modèles économiques et offre une vision précise de ce que l'évolution projetée aura comme impact sur chacun des acteurs impliqués et sur le système. Un exemple d'application est détaillé. Discussion et Conclusions : La méthode présentée permet de concevoir des scenarii de partage de la valeur économique entre les acteurs d'un projet de télémedecine. Son application à un projet particulier permet de servir de support de discussion lors des négociations.

Jue, J. S., et al. (2017). "Telemedicine broadening access to care for complex cases." J Surg Res 220: 164-170.

BACKGROUND: Surgical and nonsurgical specialists are highly centralized, making access to high-quality care difficult for many Americans. We explored the feasibility, benefits, preliminary outcomes, and patient satisfaction with a new type of health visit, in which a surgical oncologist used video telecommunication to manage and treat complex cancer diseases, including patients with severe comorbidities. MATERIALS AND METHODS: Patients visited local VA medical centers throughout Florida to engage in video telecommunication visits with a centralized surgical oncologist in Miami, who directed their oncology treatment. The average length of stay and rate of unplanned readmission were calculated within each organ. The total mileage saved was calculated by subtracting the distance between the patient's home address and the local VA from the distance between the patient's home address and the Miami VA. Travel costs were determined by the VA's reimbursement of \$0.415/mile for health-related travel and reimbursement of \$150.00 for an overnight hotel stay. A Likert scale with both positively and negatively keyed questions was used to assess patient satisfaction. RESULTS: In 24 mo, seven unplanned readmissions occurred among 195 operations. Patients experienced an 80.7% reduction in travel distance and saved a total of 213,007.58 miles by visiting their local VA instead of the Miami VA. Survey results indicate that 86% of patients believed that the telemedicine program made medical care more accessible. CONCLUSIONS: The Specialist-Directed Telemedicine Model can save patients substantial time and money by not traveling to centralized areas, while delivering greater continuity of care and patient satisfaction.

Kahn, E. N., et al. (2016). "Neurosurgery and Telemedicine in the United States: Assessment of the Risks and Opportunities." World Neurosurg 89: 133-138.

BACKGROUND: Telemedicine has seen substantial growth in the past 20 years, related to technologic advancements and evolving reimbursement policies. The risks and opportunities of neurosurgical telemedicine are nuanced. METHODS: We reviewed general and peer-reviewed literature as it relates to telemedicine and neurosurgery, with particular attention to best practices, relevant state and federal policy conditions, economic evaluations, and prospective clinical studies. RESULTS: Despite technologic development, growing interest, and increasing reimbursement opportunities, telemedicine's utilization remains limited because of concerns regarding an apparent lack of need for telemedicine services, lack of widespread reimbursement, lack of interstate licensure reciprocity, lack of universal access to necessary technology, concerns about maintaining patient confidentiality, and concerns and limited precedent regarding liability issues. The Veterans Health Administration, a component of the U.S. Department of Veterans Affairs, represents a setting in which these concerns can be largely obviated and is a model for telemedicine best practices. Results from the VA demonstrate substantial cost savings and patient satisfaction with remote care for chronic neurologic

conditions. Overall, the economic and clinical benefits of telemedicine will likely come from 1) diminished travel times and lost work time for patients; 2) remote consultation of subspecialty experts, such as neurosurgeons; and 3) remote consultation to assist with triage and care in time-sensitive scenarios, including acute stroke care and "teletrauma." CONCLUSIONS: Telemedicine is effective in many health care scenarios and will become more relevant to neurosurgical patient care. We favor proceeding with legislation to reduce barriers to telemedicine's growth.

Kahn, J. M., et al. (2016). "ICU Telemedicine and Critical Care Mortality: A National Effectiveness Study." Med Care **54**(3): 319-325.

BACKGROUND: Intensive care unit (ICU) telemedicine is an increasingly common strategy for improving the outcome of critical care, but its overall impact is uncertain. OBJECTIVES: To determine the effectiveness of ICU telemedicine in a national sample of hospitals and quantify variation in effectiveness across hospitals. RESEARCH DESIGN: We performed a multicenter retrospective case-control study using 2001-2010 Medicare claims data linked to a national survey identifying US hospitals adopting ICU telemedicine. We matched each adopting hospital (cases) to up to 3 nonadopting hospitals (controls) based on size, case-mix, and geographic proximity during the year of adoption. Using ICU admissions from 2 years before and after the adoption date, we compared outcomes between case and control hospitals using a difference-in-differences approach. RESULTS: A total of 132 adopting case hospitals were matched to 389 similar nonadopting control hospitals. The preadoption and postadoption unadjusted 90-day mortality was similar in both case hospitals (24.0% vs. 24.3%, $P=0.07$) and control hospitals (23.5% vs. 23.7%, $P<0.01$). In the difference-in-differences analysis, ICU telemedicine adoption was associated with a small relative reduction in 90-day mortality (ratio of odds ratios=0.96; 95% CI, 0.95-0.98; $P<0.001$). However, there was wide variation in the ICU telemedicine effect across individual hospitals (median ratio of odds ratios=1.01; interquartile range, 0.85-1.12; range, 0.45-2.54). Only 16 case hospitals (12.2%) experienced statistically significant mortality reductions postadoption. Hospitals with a significant mortality reduction were more likely to have large annual admission volumes ($P<0.001$) and be located in urban areas ($P=0.04$) compared with other hospitals. CONCLUSIONS: Although ICU telemedicine adoption resulted in a small relative overall mortality reduction, there was heterogeneity in effect across adopting hospitals, with large-volume urban hospitals experiencing the greatest mortality reductions.

Kane, C. K. et Gillis, K. (2018). "The Use Of Telemedicine By Physicians: Still The Exception Rather Than The Rule." Health Aff (Millwood) **37**(12): 1923-1930.

Using data from the American Medical Association's 2016 Physician Practice Benchmark Survey, we provide the first nationally representative estimates of physicians' use of telemedicine. In 2016, 15.4 percent of physicians worked in practices that used telemedicine for a wide spectrum of patient interactions, including e-visits as well as diagnoses made by radiologists who used telemedicine to store and forward data. In the same year, 11.2 percent of physicians worked in practices that used telemedicine for interactions between physicians and health care professionals. We found that in addition to specialty, larger practice size was an important correlate of telemedicine use. This suggests that despite regulatory and legislative changes to encourage the use of telemedicine, the financial burden of implementing it may be a continuing barrier for small practices.

Kang, Y., et al. (2017). "Risk Factors for All-Cause Rehospitalization Among Medicare Recipients with Heart Failure Receiving Telehomecare." Telemed J E Health **23**(4): 305-312.

OBJECTIVE: To identify potential risk factors associated with rehospitalization among Medicare recipients with heart failure (HF) receiving telehomecare. MATERIALS AND METHODS: This study is a nonexperimental, cross-sectional secondary data analysis of the Centers for Medicare and Medicaid (CMS) mandated assessment called the Outcome and Assessment Information Set (OASIS)-C, provided by a large home care company. A total of 526 patients who received telehomecare from January 1, 2011 to August 31, 2013 were included in the analyses, which used multiple logistic regression. RESULTS: The overall rate of rehospitalization was 36% while patients were receiving telehomecare. Moderately frail health status ($p = 0.01$), the presence of severe pain ($p = 0.01$), the presence of dermatologic problems ($p = 0.03$), and independence in dressing one's lower body (compared to

slightly dependent [$p = 0.01$] or mostly dependent patient groups [$p = 0.02$]) were identified as risk factors for rehospitalization. CONCLUSIONS: The risk factors identified from this study may be used to drive more effective telehomecare placements, and referrals for additional services among telehomecare patients with HF.

Kanjee, R., et al. (2016). "Six-year prevalence and incidence of diabetic retinopathy and cost-effectiveness of tele-ophthalmology in Manitoba." *Can J Ophthalmol* **51**(6): 467-470.

OBJECTIVE: The purpose of this study was to evaluate the diabetic retinopathy (DR) tele-ophthalmology screening program in Manitoba to determine prevalence and incidence of DR, as well as to estimate the program's cost-effectiveness. DESIGN: Retrospective chart review. PARTICIPANTS: A total of 4676 patients with type 2 diabetes examined 9334 times from 2007 to 2013. METHODS: Focused ophthalmic histories were recorded and examinations were performed by trained nurses, including visual acuities, intraocular pressure, and mydriatic 7 standard field stereoscopic fundus photography. Images were evaluated by retinal specialists according to the Early Treatment of Diabetic Retinopathy Study criteria. DR prevalence and incidence were then calculated during the study period. Cost-effectiveness was estimated by comparing the cost of running the tele-ophthalmology program compared with the cost of screening the same volume of patients in-office. RESULTS: The average prevalence of any DR in each year was 25.1%. The cumulative incidence of DR across 6 years was 17.1% (95% CI, 15.4%-18.7%). The average savings per tele-ophthalmology examination was \$1007. CONCLUSIONS: DR is highly prevalent among the studied population. Tele-ophthalmology provides a cost-effective means of monitoring patients as well as identifying new or treatable disease.

Kanjee, R., et al. (2017). "Six-year prevalence and incidence of diabetic retinopathy and cost-effectiveness of tele-ophthalmology in Manitoba." *Can J Ophthalmol* **52 Suppl 1**: S15-s18.

OBJECTIVE: The purpose of this study was to evaluate the diabetic retinopathy (DR) tele-ophthalmology screening program in Manitoba to determine prevalence and incidence of DR, as well as to estimate the program's cost-effectiveness. DESIGN: Retrospective chart review. PARTICIPANTS: A total of 4676 patients with type 2 diabetes examined 9334 times from 2007 to 2013. METHODS: Focused ophthalmic histories were recorded and examinations were performed by trained nurses, including visual acuities, intraocular pressure, and mydriatic 7 standard field stereoscopic fundus photography. Images were evaluated by retinal specialists according to the Early Treatment of Diabetic Retinopathy Study criteria. DR prevalence and incidence were then calculated during the study period. Cost-effectiveness was estimated by comparing the cost of running the tele-ophthalmology program compared with the cost of screening the same volume of patients in-office. RESULTS: The average prevalence of any DR in each year was 25.1%. The cumulative incidence of DR across 6 years was 17.1% (95% CI, 15.4%-18.7%). The average savings per tele-ophthalmology examination was \$1007. CONCLUSIONS: DR is highly prevalent among the studied population. Tele-ophthalmology provides a cost-effective means of monitoring patients as well as identifying new or treatable disease.

Kao, D. P., et al. (2016). "Impact of a Telehealth and Care Management Program on All-Cause Mortality and Healthcare Utilization in Patients with Heart Failure." *Telemed J E Health* **22**(1): 2-11.

BACKGROUND: Telehealth has the potential to improve chronic disease management and outcomes, but data regarding direct benefit of telehealth in patients with heart failure (HF) have been mixed. The objective of this study was to determine whether the Health Buddy Program (HBP) (Bosch Healthcare, Palo Alto, CA), a content-driven telehealth system coupled with care management, is associated with improved outcomes in Medicare beneficiaries with HF. MATERIALS AND METHODS: This was a retrospective cohort study of 623 Medicare beneficiaries with HF offered HBP enrollment compared with a propensity score-matched control group of Medicare beneficiaries with HF from the Medicare 5% sample. Associations between availability of the HBP and all-cause mortality, hospitalization, hospital days, and emergency department visits were evaluated. RESULTS: Beneficiaries offered enrollment in the HBP had 24.9% lower risk-adjusted all-cause mortality over 3 years of follow-up (hazard ratio [HR] = 0.75; 95% confidence interval [CI], 0.63-0.89; $p = 0.001$). Patients who used the

HBP at least once (36.9%) had 57.2% lower mortality compared with matched controls (HR = 0.43; 95% CI, 0.31-0.60; $p < 0.001$), whereas patients who did not use the HBP had no significant difference in survival (HR = 0.96; 95% CI, 0.78-1.19; $p = 0.69$). Patients offered the HBP also had fewer hospital admissions following enrollment (Delta = -0.05 admissions/quarter; $p = 0.011$), which was primarily observed in patients who used the HBP at least once (Delta = -0.10 admissions/quarter; $p < 0.001$). CONCLUSIONS: The HBP, a content-driven telehealth system coupled with care management, was associated with significantly better survival and reduced hospitalization in Medicare beneficiaries with HF. Prospective study is warranted to determine the mechanism of this association and opportunities for optimization.

Kassam, F., et al. (2013). "Teleglaucoma: improving access and efficiency for glaucoma care." *Middle East Afr J Ophthalmol* **20**(2): 142-149.

Teleglaucoma is the application of telemedicine for glaucoma. We review and present the current literature on teleglaucoma; present our experience with teleglaucoma programs in Alberta, Canada and Western Australia; and discuss the challenges and opportunities in this emerging field. Teleglaucoma is a novel area that was first explored a little over a decade ago and early studies highlighted the technical challenges of delivering glaucoma care remotely. Advanced technologies have since emerged that show great promise in providing access to underserved populations. Additionally, these technologies can improve the efficiency of healthcare systems burdened with an increasing number of patients with glaucoma, and a limited supply of ophthalmologists. Additional benefits of teleglaucoma systems include e-learning and e-research. Further work is needed to fully validate and study the cost and comparative effectiveness of this approach relative to traditional models of healthcare.

Kenealy, T. W., et al. (2015). "Telecare for diabetes, CHF or COPD: effect on quality of life, hospital use and costs. A randomised controlled trial and qualitative evaluation." *PLoS One* **10**(3): e0116188.

OBJECTIVES: To assess the effect of telecare on health related quality of life, self-care, hospital use, costs and the experiences of patients, informal carers and health care professionals. METHODS: Patients were randomly assigned either to usual care or to additionally entering their data into a commercially-available electronic device that uploaded data once a day to a nurse-led monitoring station. Patients had congestive heart failure (Site A), chronic obstructive pulmonary disease (Site B), or any long-term condition, mostly diabetes (Site C). Site C contributed only intervention patients - they considered a usual care option to be unethical. The study took place in New Zealand between September 2010 and February 2012, and lasted 3 to 6 months for each patient. The primary outcome was health-related quality of life (SF36). Data on experiences were collected by individual and group interviews and by questionnaire. RESULTS: There were 171 patients (98 intervention, 73 control). Quality of life, self-efficacy and disease-specific measures did not change significantly, while anxiety and depression both decreased significantly with the intervention. Hospital admissions, days in hospital, emergency department visits, outpatient visits and costs did not differ significantly between the groups. Patients at all sites were universally positive. Many felt safer and more cared-for, and said that they and their family had learned more about managing their condition. Staff could all see potential benefits of telecare, and, after some initial technical problems, many staff felt that telecare enabled them to effectively monitor more patients. CONCLUSIONS: Strongly positive patient and staff experiences and attitudes complement and contrast with small or non-significant quantitative changes. Telecare led to patients and families taking a more active role in self-management. It is likely that subgroups of patients benefitted in ways that were not measured or visible within the quantitative data, especially feelings of safety and being cared-for. TRIAL REGISTRATION: Australian New Zealand Clinical Trials Registry ACTRN12610000269033.

Kessler, E. A., et al. (2016). "Decreasing patient cost and travel time through pediatric rheumatology telemedicine visits." *Pediatr Rheumatol Online J* **14**(1): 54.

BACKGROUND: There is a critical shortage of pediatric rheumatologists in the US. Substantial travel to clinics can impose time and monetary burdens on families. The aim of this study was to evaluate the cost of in-person pediatric rheumatology visits for families and determine if telemedicine clinics

resulted in time and cost savings. Factors associated with interest in telemedicine were also explored. METHODS: Surveys were offered to parents and guardians of patients in Pediatric Rheumatology follow-up clinics in Kansas City, Missouri, the primary site of in-person care, and at a telemedicine outreach site 160 miles away, in Joplin, Missouri. Survey questions were asked about non-medical, out-of-pocket costs associated with the appointment and interest in a telemedicine clinic. RESULTS: At the primary Kansas City clinic, the median distance traveled one-way was 40 miles [IQR = 18-80]. In the Joplin sample, the median distance traveled to the telemedicine clinic was 60 miles [IQR = 20-85] compared to 175 miles [IQR = 160-200] for the same cohort of patients when seen in Kansas City ($p < 0.001$). When the Joplin cohort was seen via telemedicine they missed less time from work and school ($p = 0.028$, $p = 0.003$, respectively) and a smaller percentage spent money on food compared to when they had traveled to Kansas City ($p < 0.001$). There was no statistical difference between the Joplin cohort when they had traveled to Kansas City and the Kansas City cohort in terms of miles driven to clinic, time missed from work and school, and percentage of subjects who spent money on food. CONCLUSIONS: Traditional in-person visits can result in a financial toll on families, which can be ameliorated by the use of telemedicine. Telemedicine leveled the economic burden of clinic visits so that when the Joplin cohort was seen via telemedicine, they experienced costs similar to the Kansas City cohort.

Kirkizlar, E., et al. (2013). "Evaluation of telemedicine for screening of diabetic retinopathy in the Veterans Health Administration." *Ophthalmology* **120**(12): 2604-2610.

OBJECTIVE: To explore the cost-effectiveness of telemedicine for the screening of diabetic retinopathy (DR) and identify changes within the demographics of a patient population after telemedicine implementation. DESIGN: A retrospective medical chart review (cohort study) was conducted. PARTICIPANTS: A total of 900 type 1 and type 2 diabetic patients enrolled in a medical system with a telemedicine screening program for DR. METHODS: The cost-effectiveness of the DR telemedicine program was determined by using a finite-horizon, discrete time, discounted Markov decision process model populated by parameters and testing frequency obtained from patient records. The model estimated the progression of DR and determined average quality-adjusted life years (QALYs) saved and average additional cost incurred by the telemedicine screening program. MAIN OUTCOME MEASURES: Diabetic retinopathy, macular edema, blindness, and associated QALYs. RESULTS: The results indicate that telemedicine screening is cost-effective for DR under most conditions. On average, it is cost-effective for patient populations of >3500, patients aged <80 years, and all racial groups. Observable trends were identified in the screening population since the implementation of telemedicine screening: the number of known DR cases has increased, the overall age of patients receiving screenings has decreased, the percentage of nonwhites receiving screenings has increased, the average number of miles traveled by a patient to receive a screening has decreased, and the teleretinal screening participation is increasing. CONCLUSIONS: The current teleretinal screening program is effective in terms of being cost-effective and increasing population reach. Future screening policies should give consideration to the age of patients receiving screenings and the system's patient pool size because our results indicate it is not cost-effective to screen patients aged older than 80 years or in populations with <3500 patients.

Kirkwood, K. T., et al. (2000). "The consistency of neuropsychological assessments performed via telecommunication and face to face." *Journal of Telemedicine and Telecare* **6**(3): 147-151, 141 tabl.

Kirsh, S., et al. (2015). "Impact of a national specialty e-consultation implementation project on access." *Am J Manag Care* **21**(12): e648-654.

OBJECTIVES: To assess the early impact of implementation of the electronic consults (e-consults) initiative by the Veterans Health Administration (VHA), designed to improve specialty care access. STUDY DESIGN: Observational cohort study exploiting a natural experiment begun in May 2011 at 12 VHA medical centers and expanded to 122 medical centers by December 2013. METHODS: The following were assessed: 1) growth of e-consults by VHA regional networks, medical centers, and specialty; 2) location of patient's primary care provider (medical center vs community-based outpatient clinic [CBOC]); 3) potential patient miles needed to travel for a specialty care face-to-face consult in place of the observed e-consults using estimated geodesic distance; 4) use of specialty care

subsequent to the e-consult. RESULTS: Of 11,270,638 consults completed in 13 clinics of interest, 217,014 were e-consults (adjusted rate, 1.93 e-consults per 100 consults). The e-consult rate was highest in endocrinology (5.0 per 100), hematology (3.0 per 100), and gastroenterology (3.0 per 100). The percentage of e-consult patients with CBOC-based primary care grew from 28.5% to 44.4% in the first year of implementation and to 45.6% at year 3. Of those e-consult patients from community clinics, the average potential miles needed to travel was 72.1 miles per patient (SD = 72.6; median = 54.6; interquartile range = 17.1-108), translating to a potential savings of 6,875,631 total miles and travel reimbursement costs of \$2,853,387. CONCLUSIONS: E-consult volume increased significantly since inception within many medical and surgical specialties. For patients receiving primary care at one of more than 800 CBOCs, e-consults may decrease travel burden and direct travel costs for patients.

Korte, C., et al. (2014). "Determining the threshold of time-delay for teleoperation accuracy and efficiency in relation to telesurgery." *Telemed J E Health* **20**(12): 1078-1086.

BACKGROUND: Advances in robotics have made teleoperated surgical procedures a feasible means of treating patients in remote locations. In this study a suite of experiments was performed to investigate the influence of time-delay on teleoperation accuracy and efficiency during a path-following task. MATERIALS AND METHODS: Subjects used a Phantom Omni 6-degrees of freedom (dof) input device (Sensable, Triangle Park, NC) to move the end-effector of a Mitsubishi (Tokyo, Japan) PA-10 7-dof robotic manipulator along a prescribed path. End-effector motion was recorded using a video motion capture system. Time-delays ranging from 0 to 2.5 s were artificially imposed. Performance was quantified by time to complete the task, path length, and square root-mean-square (RMS) error. Randomization of time-delay order and allowance for practice runs reduced the learning effect. An imposed time limit and pacing were used to negate the move-and-pause strategy that emerged in early trials. RESULTS: Time to complete the task and RMS error generally increased with increasing time-delay. Path length also generally increased, but not as consistently. With imposed pacing, RMS error continued to increase beyond 1.5 s, and some subjects were not able to complete the task in the allotted 90 s. CONCLUSIONS: The results suggest a threshold of time-delay in the range of 1.5-2.0 s. Beyond 1.5 s, subjects adopted a move-and-pause strategy that increased completion time to preserve path-tracking accuracy. If paced, tracking accuracy tended to degrade substantially beyond 1.5 s. A strong learning effect was evident, and experienced teleoperators performed substantially better than novices.

Krukltis, R. J., et al. (2014). "Clinical and financial considerations for implementing an ICU telemedicine program." *Chest* **145**(6): 1392-1396.

As the population in the United States increases and ages, the need to provide high-quality, safe, and cost-effective care to the most critically ill patients will be of great importance. With the projected shortage of intensivists, innovative changes to improve efficiency and increase productivity will be necessary. Telemedicine programs in the ICUs (tele-ICUs) are a successful strategy to improve intensivist access to critically ill patients. Although significant capital and maintenance costs are associated with tele-ICUs, these costs can be offset by indirect financial benefits, such as decreased length of stay. To achieve the positive clinical outcomes desired, tele-ICUs must be carefully designed and implemented. In this article, we discuss the clinical benefits of tele-ICUs. We review the financial considerations, including direct and indirect reimbursement and development and maintenance costs. Finally, we review design and implementation considerations for tele-ICUs.

Kulcsar, M., et al. (2014). "Improving stroke outcomes in rural areas through telestroke programs: an examination of barriers, facilitators, and state policies." *Telemed J E Health* **20**(1): 3-10.

INTRODUCTION: Every year in the United States more than 600,000 ischemic stroke patients do not receive proven, effective stroke treatment or may not be medically eligible to receive the one medication endorsed by the U.S. Food and Drug Administration for acute ischemic stroke. The lack of treatment is due partly to shortages of neurological experts in rural and underserved areas. Telestroke programs can improve stroke care for stroke patients in rural and underserved settings by using interactive telecommunication technology that connects centrally located neurological experts to rural

healthcare facilities. Many states have enacted policies and practices that facilitate telestroke access. MATERIALS AND METHODS: We reviewed statutes and regulations in all 50 states that affect the adoption of telemedicine programs and describe examples of state-implemented programs in two states with policies that encourage telestroke use. RESULTS AND DISCUSSION: This review presents evidence of the value and effectiveness of telestroke programs, as well as an explanation of common barriers and facilitators of telestroke, including licensing and credentialing rules, reimbursement issues, and liability concerns. Most states have adopted policies that affect the adoption of telestroke programs. Georgia and South Carolina are examples of states implementing stroke policies using a telestroke model to treat stroke patients in rural areas.

Kumar, S., et al. (2013). "Tele-ICU: efficacy and cost-effectiveness of remotely managing critical care." Perspect Health Inf Manag **10**: 1f.

Tele-ICU is the use of an off-site command center in which a critical care team (intensivists and critical care nurses) is connected with patients in distant ICUs to exchange health information through real-time audio, visual, and electronic means. The aim of this study is to review the available literature related to the efficacy and cost-effectiveness of tele-ICU applications and to study the possible barriers to broader adoption. While the available studies draw conclusions on cost based on mortality and length of stay, actual costs were not reported. Another problem with the studies is the lack of consistent measurement, reporting, and adjustment for patient severity. From the data available, tele-ICU seems to be a promising path, especially in the United States, where there is a limited number of board-certified intensivists.

Langkamp, D. L., et al. (2015). "Telemedicine for children with developmental disabilities: a more effective clinical process than office-based care." Telemed J E Health **21**(2): 110-114.

BACKGROUND: The literature on the use of telemedicine for children with developmental disabilities (DD) is limited and mostly describes telemedicine being used to link patients with distant subspecialty multidisciplinary care. Parents generally have reported satisfaction with such care and have perceived it to be equally effective as in-person care. Here we report on the use of school-based asynchronous telemedicine to connect children with DD with primary care providers. MATERIALS AND METHODS: We developed Tele-Health-Kids, a school-based program using asynchronous telemedicine to connect children with DD with their primary care physician for the care of minor illnesses. We surveyed parents at enrollment and after the child's first telemedicine visit to assess satisfaction. We describe 4 cases that illustrate benefits, particularly for children with DD and challenging behaviors, suggesting that asynchronous telemedicine may actually be superior to traditional in-office visits in some circumstances. RESULTS: Most parents expressed a high level of satisfaction with the program. Benefits identified include decreased stress to the child and the parents as well as increasing the likelihood of a successful medical examination due to greater cooperation by the child. Visits using asynchronous or "store and forward" telemedicine technology may be superior in some situations by allowing the visit to be performed at a pace that can be adjusted to the needs of the child with DD. CONCLUSIONS: More research in the use of asynchronous telemedicine for children and youth with DD, particularly for children with DD and challenging behaviors, is needed.

Lau, C. P. et Zhang, S. (2013). "Remote monitoring of cardiac implantable devices in the Asia-Pacific." Europace **15 Suppl 1**: i65-i68.

Remote monitoring of pacemakers and implantable cardioverter defibrillators (ICDs) has emerged as a tool to replace regular follow-up of such devices, and to detect hardware failure, arrhythmias, and heart failure decompensation. The Asia-Pacific region is a geographically diverse area, with widely different cardiac device implant rates and expertise. However, common to all countries, distance and logistic for patients to reach an expert monitoring centre for routine follow up are significant, and in some countries, this will likely be replaced by remote monitoring. Unscheduled visits such as for the treatment of atrial fibrillation and ICD shocks will be expedited. There has been an increase in both pacemaker and ICD implant rates in Asia-Pacific, due to an ageing population and improvement in economic condition. Among the countries, Australia and Japan are the major users of remote monitoring. According to the statistics of the suppliers, in Australia, up to 15% of pacemakers, 40%

ICD, and 30% cardiac resynchronization therapy (CRT)/cardiac resynchronization therapy defibrillator (CTRD) are remotely monitored. The corresponding numbers for Japan are 5, 50, and 50% respectively. The monitoring personnel include nurses, technicians, and doctors, either from local centre or from device companies. Cost, lack of reimbursement, and logistic support are major issues in widespread application of remote monitoring technology. In conclusion, remote monitoring is increasing in Asia-Pacific region despite the increase in cost. Implantable cardioverter defibrillators and CRT/CRTDs are more likely than pacemakers to be enabled with remote monitoring.

Leichter, S. B., et al. (2013). "Impact of remote management of diabetes via computer: the 360 study--a proof-of-concept randomized trial." *Diabetes Technol Ther* **15**(5): 434-438.

BACKGROUND: Previous studies have provided limited guidance regarding the clinical efficacy and cost-effectiveness of interventions using "telemedicine" models in the management of diabetes mellitus. We conducted a study to determine if routine clinical assessments of diabetes patients could be effectively conducted via computer and telephone interaction with patients and still provide clinical results similar to traditional office care. **SUBJECTS AND METHODS:** We enrolled 100 subjects with diabetes in this 12-month, randomized, controlled, non-inferiority study. Subjects were randomized (1:1 ratio) to a control group (CG) or study group (SG). Baseline characteristics were similar. CG subjects participated in quarterly office visits; SG subjects participated in two office visits (months 6 and 12) and two telemedicine interactions (months 3 and 9). Changes in clinical measurements (hemoglobin A1c [HbA1c], blood pressure, lipids, body mass index [BMI], and body weight) and clinician time requirements were assessed. **RESULTS:** Seventy subjects completed the study (CG, n=37; SG, n=33). No significant between-group differences in HbA1c, blood pressure, lipids, or BMI were seen at 12 months. SG subjects showed significantly greater reductions in mean (SD) body weight compared with CG subjects: -5.2 (1.6) pounds versus -0.7 (1.5) pounds, respectively (P=0.04). Clinician time requirements for SG subjects were reduced by >40%. **CONCLUSIONS:** Our study demonstrated that use of a telemedicine-based treatment protocol in diabetes patients is feasible and efficient and yields similar clinical outcomes compared with traditional, clinic-based protocols. Telemedicine applications of computer software can potentially expand access to care for patients and may reduce costs for patients, providers, and payers.

LeRouge, C. et Garfield, M. J. (2013). "Crossing the telemedicine chasm: have the U.S. barriers to widespread adoption of telemedicine been significantly reduced?" *Int J Environ Res Public Health* **10**(12): 6472-6484.

Barriers have challenged widespread telemedicine adoption by health care organizations for 40 years. These barriers have been technological, financial, and legal and have also involved business strategy and human resources. The article canvasses recent trends-events and activities in each of these areas as well as US health reform activities that might help to break down these barriers. The key to telemedicine success in the future is to view it as an integral part of health care services and not as a stand-alone project. Telemedicine must move from experimental and separate to integrated and equivalent to other health services within health care organizations. Furthermore, telemedicine serves as vital connective tissue for expanding health care organization networks.

Liddy, C., et al. (2015). "What are the Costs of Improving Access to Specialists through eConsultation? The Champlain BASE Experience." *Stud Health Technol Inform* **209**: 67-74.

Excessive wait times and poor access to care are among the most significant problems facing health care service delivery in Canada and beyond. We implemented the Champlain BASE eConsult service in the region of Ottawa, Canada to increase access to specialist care. We have collected ongoing utilization data and provider surveys over a three year period, providing a unique opportunity to explore the economic aspects of this multispecialty eConsult service. This is an economic evaluation from the perspective of the payer: the Ministry of Health and Long-Term Care of Ontario. All eConsults submitted during April 1, 2011 to March 31, 2014 were included. We attributed cost savings only to those cases where an eConsult led to the avoidance of a face-to-face specialist visit. A total of 2606 eConsults directed to 27 different speciality groups were included. In 40.3% (n=1051) of cases processed, a face-to-face specialist visit was originally planned but avoided as a result of eConsult, while 29% led to a referral. The estimated cost per eConsult for Years 1, 2, and 3 were \$131.05,

\$10.34, and \$6.45 respectively. Results from a sensitivity analysis project that the eConsult service will break even once we reach 7818 eConsults. This is one of the first studies to examine costs across a multispecialty eConsult service. We saw a marked decrease in the cost per eConsult over each annual period. Future research is needed to identify and examine similar outcomes that may lead to cost savings.

Liddy, C., et al. (2016). "What are the cost savings associated with providing access to specialist care through the Champlain BASE eConsult service? A costing evaluation." *Bmj Open* 6(6): e010920.

OBJECTIVE: This study estimates the costs and potential savings associated with all eConsult cases completed between 1 April 2014 and 31 March 2015. **DESIGN:** Costing evaluation from the societal perspective estimating the costs and potential savings associated with all eConsults completed during the study period. **SETTING:** Champlain health region in Eastern Ontario, Canada. **POPULATION:** Primary care providers and specialists registered to use the eConsult service. **MAIN OUTCOME MEASURES:** Costs included (1) delivery costs; (2) specialist remuneration; (3) costs associated with traditional (face-to-face) referrals initiated as a result of eConsult. Potential savings included (1) costs of traditional referrals avoided; (2) indirect patient savings through avoided travel and lost wages/productivity. Net potential societal cost savings were estimated by subtracting total costs from total potential savings. **RESULTS:** A total of 3487 eConsults were completed during the study period. In 40% of eConsults, a face-to-face specialist visit was originally contemplated but avoided as result of eConsult. In 3% of eConsults, a face-to-face specialist visit was not originally contemplated but was prompted as a result of the eConsult. From the societal perspective, total costs were estimated at \$207 787 and total potential savings were \$246 516. eConsult led to a net societal saving of \$38 729 or \$11 per eConsult. **CONCLUSIONS:** Our findings demonstrate potential cost savings from the societal perspective, as patients avoided the travel costs and lost wages/productivity associated with face-to-face specialist visits. Greater savings are expected once we account for other costs such as avoided tests and visits and potential improved health outcomes associated with shorter wait times. Our findings are valuable for healthcare delivery decision-makers as they seek solutions to improve care in a patient-centred and efficient manner.

Lowery, C. L., et al. (2014). "Distributing medical expertise: the evolution and impact of telemedicine in arkansas." *Health Aff (Millwood)* 33(2): 235-243.

Arkansas's telemedicine system has evolved since 2003 from a support mechanism for high-risk pregnancy consultations to an initiative that spans medical specialties, including asthma care, pediatric cardiology, gynecology, and mental health. The system has also expanded care to diverse populations, including incarcerated women and people with HIV/AIDS. This article describes the system's evolution, organization, and diverse activities. It also shows how telemedicine can have a positive impact on a rural state and how such a state can become an engine for change regionally. The Arkansas telemedicine system faced classic challenges to uptake and function, in building and sustaining funding, in obtaining insurance reimbursement for services, and in educating patients and providers. The system's impacts on health outcomes and medical practice culture have also reached beyond patient care and provider support. The existing yet continually evolving telemedicine infrastructure and partnerships in Arkansas will respond to the state's inevitable health care reform adaptations from the Affordable Care Act and could provide direction for other states seeking to adopt or expand their telemedicine efforts.

Lukacs, B. (2018). La CNIL et l'analyse des projets de big data en santé. *Santé et intelligence artificielle*, Paris : CNRS éditions: 347-352.

Lukacs, B. (2018). Les données : protection, conditions juridiques d'accès et de traitement. *Santé et intelligence artificielle*, Paris : CNRS éditions: 333-346.

MacKinney, A. C., et al. (2015). "The Business Case for Tele-emergency." *Telemed J E Health* 21(12): 1005-1011.

BACKGROUND: Tele-emergency is an expanding telehealth service that provides real-time audio/visual consultation delivered by an emergency medicine team to a remote, often rural, emergency

department (ED). Financial analyses of tele-emergency in the literature are limited. This article expands the tele-emergency literature to describe the business case for tele-emergency. "Business case" is defined as a reasoned argument, supported by objective data and/or qualitative judgment, to implement or continue a service or product. MATERIALS AND METHODS: To evaluate tele-emergency financing from the perspective of a critical access hospital (CAH), 10 financial analysis categories were defined. Telephone interviews, site visits, and financial data from the eEmergency program of Avera Health (Sioux Falls, SD) were used to populate the categories. Avera Health information was augmented with national data where available. Three financial scenarios were then analyzed for CAH profit/loss associated with tele-emergency. RESULTS: Tele-emergency financial analysis demonstrated an \$187,614 profit in a high revenue/low expense scenario, \$49,841 profit in a midrange scenario, and \$69,588 loss in a low revenue/high expense scenario. CONCLUSIONS: Tele-emergency may be a profitable rural hospital service line if the participating hospital adjusts ED processes to take advantage of increased revenue/savings opportunities afforded by tele-emergency. Savings due to tele-emergency primarily accrue when physician ED backup and physician ED staffing costs are substituted.

Malyon, R., et al. (2013). "Differences in the cost of admitted patient care for Indigenous people and people from remote locations." *Aust Health Rev* **37**(1): 26-31.

The introduction of activity-based funding (ABF) means that Australian Refined Diagnosis Related Groups and their relative costs will become the basis for reimbursing public hospitals for admitted patient services. This study sought to investigate the variation in admitted patient costs for Indigenous people and people from remote areas that cannot be explained by variation in the clinical mix of cases, and to interpret this variation within an ABF framework. The study used a dataset of discharges from public hospitals of Northern Territory residents between July 2007 and June 2009. Multivariate regression analysis was used to estimate the variation in average costs, using the logarithm of patient cost as the dependent variable and Major Diagnostic Categories (MDCs), hospitals and population subgroups (Indigenous v. non-Indigenous; urban v. remote) as independent variables. Although much of the additional cost of Indigenous and remote patients was found to be due to differences in severity and complexity between MDCs, there were extra costs for remote Indigenous patients that were not captured by the classification system. Hospitals servicing larger than average proportions of these patients could be systematically underfunded within an ABF framework unless a price adjustment is applied.

Manchikanti, L., et al. (2016). "Proposed Medicare Physician Payment Schedule for 2017: Impact on Interventional Pain Management Practices." *Pain Physician* **19**(7): E935-955.

The Centers for Medicare and Medicaid Services (CMS) released the proposed 2017 Medicare physician fee schedule on July 7, 2016, addressing Medicare payments for physicians providing services either in an office or facility setting, which also includes payments for office expenses and quality provisions for physicians. This proposed rule occurs in the context of numerous policy changes, most notably related to the Medicare Access & CHIP Reauthorization Act of 2015 (MACRA) and its Merit-Based Incentive Payment System (MIPS). The proposed rule affects interventional pain management specialists in reimbursement for evaluation and management services, as well as procedures performed in a facility or in-office setting. Changes in the proposed fee schedule impacting interventional pain management practices include adjustments to the meaningful use (MU) program, care management in patient-centered services, identification and review of potentially misvalued services, evaluation of moderate sedation services, Medicare telehealth services, updated geographic practice cost index, data collection on resources used in furnishing global services, reporting of modifier 25 for zero day global services, Medicare Advantage Part C provider and supplier enrollment, appropriate use criteria (AUC) for advanced imaging services, and Medicare shared savings programs. The proposed schedule has provided rates for new epidural codes with or without imaging (fluoroscopy or computed tomography [CT]) and a fee schedule for a new code covering endoscopic spinal decompression. Review of payment rates show major discrepancies in payment schedules with high payments for hospitals, 2,156% higher than in-office procedures. Some procedures which were converted from in-office settings to ambulatory surgery centers (ASCs) are being reimbursed at 1,366% higher than ASCs. The Medicare Payment Advisory Commission (MedPAC) recommendation

on avoiding the discrepancies and site-of-service differentials in in-office settings, hospital outpatient settings, and ASCs has not been agreed to by CMS. Thus, even though the changes appear to be minor in physician services and in-office service payment, these changes cumulatively have been reducing payments for interventional procedures. Further, in-office reimbursement is overall significantly lower than ASCs and hospital outpatient departments (HOPDs) specifically for intraarticular injections, peripheral nerve blocks, and peripheral neurolytic injections. The significant advantage also continues for hospitals in their reimbursement for facility fee for evaluation and management services. This health policy review describes various issues related to health care expenses, health care reform, and finally its effects on physician payments for all services and also for the services provided in an office setting.

McWilliams, T., et al. (2016). "Telehealth for paediatric burn patients in rural areas: a retrospective audit of activity and cost savings." *Burns* **42**(7): 1487-1493.

INTRODUCTION: Since 2005, the Western Australian paediatric burn unit has provided a state-wide clinical consultancy and support service for the assessment and management of acute and rehabilitative burn patients via its telehealth service. Since then, the use of this telehealth service has steadily increased as it has become imbedded in the model of care for paediatric burn patients. Primarily, the service involves acute and long term patient reviews conducted by the metropolitan-located burn unit in contact with health practitioners, advising patients and their families who reside outside the metropolitan area thereby avoiding unnecessary transfers and inpatient bed days. A further benefit of the paediatric burn service using telehealth is more efficient use of tertiary level burn unit beds, with only those patients meeting clinical criteria for admission being transferred. **AIM:** To conduct a retrospective audit of avoided transfers and bed days in 2005/06-2012/13 as a result of the use of the paediatric Burns Telehealth Service and estimate their cost savings in 2012/13. **METHOD:** A retrospective chart audit identified activity, avoided unnecessary acute and scar review patient transfers, inpatient bed days and their associated avoided costs to the tertiary burn unit and patient travel funding. **RESULTS:** Over the period 2005/06-2012/13 the audit identified 4,905 avoided inpatient bed days, 364 avoided acute patient transfers and 1,763 avoided follow up review transfers for a total of 1,312 paediatric burn patients as a result of this telehealth service. This paper presents the derivation of these outcomes and an estimation of their cost savings in 2012/13 of AUD 1.89million. **CONCLUSION:** This study demonstrates avoided patient transfers, inpatient bed days and associated costs as the result of an integrated burns telehealth service.

Mehrotra, A., et al. (2017). "Rapid Growth In Mental Health Telemedicine Use Among Rural Medicare Beneficiaries, Wide Variation Across States." *Health Aff (Millwood)* **36**(5): 909-917.

Congress and many state legislatures are considering expanding access to telemedicine. To inform this debate, we analyzed Medicare fee-for-service claims for the period 2004-14 to understand trends in and recent use of telemedicine for mental health care, also known as telemental health. The study population consisted of rural beneficiaries with a diagnosis of any mental illness or serious mental illness. The number of telemental health visits grew on average 45.1 percent annually, and by 2014 there were 5.3 and 11.8 telemental health visits per 100 rural beneficiaries with any mental illness or serious mental illness, respectively. There was notable variation across states: In 2014 nine had more than twenty-five visits per 100 beneficiaries with serious mental illness, while four states and the District of Columbia had none. Compared to other beneficiaries with mental illness, beneficiaries who received a telemental health visit were more likely to be younger than sixty-five, be eligible for Medicare because of disability, and live in a relatively poor community. States with a telemedicine parity law and a pro-telemental health regulatory environment had significantly higher rates of telemental health use than those that did not.

Melchiorre, M. G., et al. (2017). "eHealth in integrated care programs for people with multimorbidity in Europe: insights from the ICARE4EU project." *Health Policy*(Ahead of print).

<http://dx.doi.org/10.1016/j.healthpol.2017.08.006>

eHealth applications for multimorbidity are not widely implemented In Europe.?In most cases Electronic Health Records (EHRs) are adopted. Adequate funding mechanisms, interoperability and

technical support seem to be lacking. eHealth could support integrated care for people with multimorbidity. eHealth could help older people with multimorbidity living in the community.

Mendez, I., et al. (2013). "The use of remote presence for health care delivery in a northern Inuit community: a feasibility study." *Int J Circumpolar Health* **72**.

OBJECTIVE: To evaluate the feasibility of remote presence for improving the health of residents in a remote northern Inuit community. **STUDY DESIGN:** A pilot study assessed patient's, nurse's and physician's satisfaction with and the use of the remote presence technology aiding delivery of health care to a remote community. A preliminary cost analysis of this technology was also performed. **METHODS:** This study deployed a remote presence RP-7 robot to the isolated Inuit community of Nain, Newfoundland and Labrador for 15 months. The RP-7 is wirelessly controlled by a laptop computer equipped with audiovisual capability and a joystick to maneuver the robot in real time to aid in the assessing and care of patients from a distant location. Qualitative data on physician's, patient's, caregiver's and staff's satisfaction were collected as well as information on its use and characteristics and the number of air transports required to the referral center and associated costs. **RESULTS:** A total of 252 remote presence sessions occurred during the study period, with 89% of the sessions involving direct patient assessment or monitoring. Air transport was required in only 40% of the cases that would have been otherwise transported normally. Patients and their caregivers, nurses and physicians all expressed a high level of satisfaction with the remote presence technology and deemed it beneficial for improved patient care, workloads and job satisfaction. **CONCLUSIONS:** These results show the feasibility of deploying a remote presence robot in a distant northern community and a high degree of satisfaction with the technology. Remote presence in the Canadian North has potential for delivering a cost-effective health care solution to underserved communities reducing the need for the transport of patients and caregivers to distant referral centers.

Merchant, K. A., et al. (2015). "Hospital Views of Factors Affecting Telemedicine Use." *Rural Policy Brief*(2015 5): 1-4.

Telemedicine (also known as telehealth) is a means to increase access to care, one of the foundations of the Triple Aim. However, the expansion of telemedicine services in the United States has been relatively slow. We previously examined the extent of uptake of hospital based telemedicine using the 2013 HIMSS (Healthcare Information and Management Systems Society) Analytics national database of 4,727 non-specialty hospitals. Our analysis indicated that the largest percentage of operational telemedicine implementations (15.7 percent) was in radiology departments, with a substantial number in emergency/trauma care (7.5 percent) and cardiology/stroke/heart attack programs (6.8 percent). However, existing databases are limited because they do not identify whether a respondent hospital is a "hub" (providing telemedicine services) or a "spoke" (receiving telemedicine services). Therefore, we used data from interviews with hospital representatives to deepen the research and understanding of telemedicine use and the factors affecting that use. Interviews were conducted with key informants at 18 hub hospitals and 18 spoke hospitals to explore their perceptions of barriers and motivators to telemedicine adoption and expansion. **Key Findings.** (1) Respondents from both hub and spoke hospitals reported that telemedicine helps them meet their mission, enhances access, keeps lower-acuity patients closer to home, and helps head off competition. (2) Respondents from both hub and spoke hospitals reported licensing and credentialing to be significant barriers to telemedicine expansion. Thus, half of hubs provide services only within their state. (3) A variety of one-time funding sources have been used to initiate and grow telemedicine services among hubs and spokes. However, reimbursement issues have impeded the development of workable business models for sustainability. Hub hospitals shoulder the responsibility for identifying sustainable business models. (4) Although respondents from both hub and spoke hospitals reported that physician buy-in is mostly positive, they also believe that physician buy-in will improve if physicians are given time to adjust to practicing medicine using telemedicine technology.

Messina, W. (2016). "Decreasing Congestive Heart Failure Readmission Rates Within 30 Days at the Tampa VA." *Nurs Adm Q* **40**(2): 146-152.

High hospital readmission rates contribute to the problem of escalating costs and fragmented quality in the US health care system. This article describes the implementation of a home telehealth (HT) performance improvement project with subsequent cost-avoidance savings. The HT project was designed to potentiate communication between and among patients, clinicians, and administrative staff, in addition to reducing readmissions for patients with congestive heart failure at the James A. Haley Veterans Hospital in Tampa, Florida. Pre- and post-HT implementation comparisons were made of readmission rates, costs, and veteran satisfaction from the same 4-month periods in 2012 and 2013. The application of telehealth and phone care initiatives reduced the congestive heart failure hospital readmission rate by 5%, decreased costs, and improved veteran satisfaction with overall care experience.

Mitchell, J. (2000). "Increasing the cost-effectiveness of telemedicine by embracing e-health." J Telemed Telecare **6 Suppl 1**: S16-19.

In 1999 a national study of telemedicine in Australia led to the promotion of the concept of 'e-health', the health sector's equivalent of 'e-commerce'. A new study explored the view that, with the convergence of technologies and the consequent increase in ability to perform multiple functions with those technologies, it is unwise to promote telemedicine in isolation from other uses of technologies in health-care. The major sources of information for the study were the presentations and discussions at five national workshops held to discuss the findings of the original report on telemedicine. Nineteen case studies were identified. The case studies showed that with the convergence of technologies telehealth is becoming part of e-health. The cost-effectiveness of both telehealth and telemedicine improves considerably when they are part of an integrated use of telecommunications and information technology in the health sector.

Moffatt, J. J. et Eley, D. S. (2010). "The reported benefits of telehealth for rural Australians." Aust Health Rev **34**(3): 276-281.

OBJECTIVE: A literature review was conducted to identify the reported benefits attributed to telehealth for people living and professionals working in rural and remote areas of Australia. **DATA SOURCES:** Scopus and relevant journals and websites were searched using the terms: telemedicine, telehealth, telepsychiatry, teledermatology, teleradiology, Australia, and each state and territory. Publications since 1998 were included. **STUDY SELECTION:** The initial search resulted in 176 articles, which was reduced to 143 when research reporting on Australian rural, regional or remote populations was selected. **DATA SYNTHESIS:** A narrative review was conducted using an existing 'benefits' framework. Patients are reported to have benefited from: lower costs and reduced inconvenience while accessing specialist health services; improved access to services and improved quality of clinical services. Health professionals are reported to have benefits from access to continuing education and professional development; provision of enhanced local services; experiential learning, networking and collaboration. **DISCUSSION:** Rural Australians have reportedly benefited from telehealth. The reported improved access and quality of clinical care available to rural Australians through telemedicine and telehealth may contribute to decreasing the urban-rural health disparities. The reported professional development opportunities and support from specialist through the use of telehealth may contribute to improved rural medical workforces recruitment and retention.

Mohr, D. C., et al. (2011). "Supportive accountability: a model for providing human support to enhance adherence to eHealth interventions." J Med Internet Res **13**(1): e30.

The effectiveness of and adherence to eHealth interventions is enhanced by human support. However, human support has largely not been manualized and has usually not been guided by clear models. The objective of this paper is to develop a clear theoretical model, based on relevant empirical literature, that can guide research into human support components of eHealth interventions. A review of the literature revealed little relevant information from clinical sciences. Applicable literature was drawn primarily from organizational psychology, motivation theory, and computer-mediated communication (CMC) research. We have developed a model, referred to as "Supportive Accountability." We argue that human support increases adherence through accountability to a coach who is seen as trustworthy, benevolent, and having expertise. Accountability should involve clear, process-oriented

expectations that the patient is involved in determining. Reciprocity in the relationship, through which the patient derives clear benefits, should be explicit. The effect of accountability may be moderated by patient motivation. The more intrinsically motivated patients are, the less support they likely require. The process of support is also mediated by the communications medium (eg, telephone, instant messaging, email). Different communications media each have their own potential benefits and disadvantages. We discuss the specific components of accountability, motivation, and CMC medium in detail. The proposed model is a first step toward understanding how human support enhances adherence to eHealth interventions. Each component of the proposed model is a testable hypothesis. As we develop viable human support models, these should be manualized to facilitate dissemination.

Morland, L. A., et al. (2013). "Telemedicine: a cost-reducing means of delivering psychotherapy to rural combat veterans with PTSD." *Telemed J E Health* **19**(10): 754-759.

BACKGROUND: Although effective psychotherapies for posttraumatic stress disorder (PTSD) exist, high percentages of Veterans in need of services are unable to access them. One particular challenge to providing cost-effective psychological treatments to Veterans with PTSD involves the difficulty and high cost of delivering in-person, specialized psychotherapy to Veterans residing in geographically remote locations. The delivery of these services via clinical videoteleconferencing (CVT) has been presented as a potential solution to this access to care problem. **MATERIALS AND METHODS:** This study is a retrospective cost analysis of a randomized controlled trial investigating telemedicine service delivery of an anger management therapy for Veterans with PTSD. The parent trial found that the CVT condition provided clinical results that were comparable to the in-person condition. Several cost outcomes were calculated in order to investigate the clinical and cost outcomes associated with the CVT delivery modality relative to in-person delivery. **RESULTS:** The CVT condition was significantly associated with lower total costs compared with the in-person delivery condition. The delivery of mental health services via CVT enables Veterans who would not normally receive these services access to empirically based treatments. Additional studies addressing long-term healthcare system costs, indirect cost factors at the patient and societal levels, and the use of CVT in other geographic regions of the United States are needed. **CONCLUSIONS:** The results of this study provide evidence that CVT is a cost-reducing mode of service delivery to Veterans with PTSD relative to in-person delivery.

Moroz, I., Kendall, C., Liddy, C., et al. (2018). "The use of electronic consultations is associated with lower specialist referral rates: a cross-sectional study using population-based health administrative data." *Family Practice* **35**(6): 698-705.

<https://dx.doi.org/10.1093/fampra/cmy020>

The referral-consultation process can be difficult to navigate. Electronic consultations (eConsults) can help streamline referrals by facilitating inter-provider communication. We evaluated the potential effect of eConsult on specialist referral rates in Ontario among family physicians providing comprehensive care. We conducted a retrospective 1:3 matched cohort study examining total referrals and referrals to all available medical specialties from primary care providers between 1 April 2014 and 31 March 2015. We used multivariable random effects Poisson regression analysis to compare referral rates between eConsult and non-eConsult users while adjusting for relevant patient and provider characteristics. Referral rates were expressed per physician, per 100 patients and per 100 patient encounters. There were 113197 referrals across all medical specialties made by 119 eConsult physicians and 352 matched controls. Referral rates per physician were significantly lower in the eConsult group for all specialty groupings [unadjusted rate ratio (RR) = 0.87, 95% confidence interval (CI) = 0.80–0.95; adjusted RR = 0.92, 95% CI = 0.85–1.00]. Referral rates per patient were lower among eConsult physicians (unadjusted RR = 0.91, 95% CI = 0.84–0.98) but this difference was not statistically significant after adjustment (adjusted RR = 0.96, 95% CI = 0.90–1.02). No statistically significant difference was observed when referrals were expressed per 100 patient encounters. This is the first Canadian study to examine the potential effect of eConsult on overall referrals at a population level. Our findings demonstrate that using eConsult service is associated with fewer referrals from primary to specialist care, with considerable potential for cost savings to our single-payer system.

Morphew, T., et al. (2013). "Mobile health care operations and return on investment in predominantly underserved children with asthma: the breathmobile program." *Popul Health Manag* **16**(4): 261-269.

Underserved populations have limited access to care. Improved access to effective asthma care potentially improves quality of life and reduces costs associated with emergency department (ED) visits. The purpose of this study is to examine return on investment (ROI) for the Breathmobile Program in terms of improved patient quality-adjusted life years saved and reduced costs attributed to preventable ED visits for 2010, with extrapolation to previous years of operation. It also examines cost-benefit related to reduced morbidity (ED visits, hospitalizations, and school absenteeism) for new patients to the Breathmobile Program during 2008-2009 who engaged in care (≥ 3 visits). This is a retrospective analysis of data for 15,986 pediatric patients, covering 88,865 visits, participating in 4 Southern California Breathmobile Programs (November 16, 1995-December 31, 2010). The ROI calculation expressed the cost-benefit ratio as the net benefits (ED costs avoided+relative value of quality-adjusted life years saved) over the per annum program costs (approximately \$500,000 per mobile). The ROI across the 4 California programs in 2010 was \$6.73 per dollar invested. Annual estimated emergency costs avoided in the 4 regions were \$2,541,639. The relative value of quality-adjusted life years saved was \$24,381,000. For patients new to the Breathmobile Program during 2008-2009 who engaged in care (≥ 3 visits), total annual morbidity costs avoided per patient were \$1395. This study suggests that mobile health care is a cost-effective strategy to deliver medical care to underserved populations, consistent with the Triple Aims of Therapy.

Nakamura, N., et al. (2014). "A meta-analysis of remote patient monitoring for chronic heart failure patients." *J Telemed Telecare* **20**(1): 11-17.

We carried out a meta analysis of remote patient monitoring (RPM) for chronic heart failure (CHF) patients. A literature search was used to identify randomised controlled trials with more than 40 patients, published between February 2003 and February 2013. The primary outcome (mortality) was analysed using a random effect model. Thirteen studies were included (3337 patients). RPM resulted in a significantly lower mortality (risk ratio 0.76; 95% confidence interval 0.62 to 0.93) compared to usual care. The test for heterogeneity showed that articles had been extracted homogeneously ($I^2=0\%$, $P=0.67$). In order to determine which RPM model was most effective, subgroup analyses were conducted by age, severity of illness, measurement frequency, medication management and speed of intervention. The group with rapid intervention had the lowest mortality (rapid group risk ratio=0.59, non-rapid group risk ratio=0.88, $P=0.05$). The group with high measurement frequency had lower mortality (high frequency group risk ratio=0.62, low frequency group risk ratio=0.89, $P=0.07$). The group with medication management had lower mortality (medication group risk ratio=0.65, non medication group risk ratio=0.85, $P=0.19$). RPM is effective in chronic heart failure and rapid intervention was the most important factor in the RPM model.

Narasimhan, M., et al. (2015). "Impact of a Telepsychiatry Program at Emergency Departments Statewide on the Quality, Utilization, and Costs of Mental Health Services." *Psychiatr Serv* **66**(11): 1167-1172.

OBJECTIVE: This study estimated the impact of a statewide, centralized telepsychiatry service provided in nonpsychiatric emergency departments (EDs) on use of mental health services. **METHODS:** Individuals treated via telepsychiatry were compared with a matched control group of individuals with mental health diagnoses who were treated in nonparticipating hospitals. Bivariate and two-part and generalized linear regression models were used to assess differences between the two groups in outpatient follow-up, hospital admission following the ED visit, length of hospital stay if admitted, and inpatient and total costs. **RESULTS:** Between March 2009 and June 2013, there were 9,066 patients with at least one telepsychiatry visit. Of these, 7,261 had index telepsychiatry visits that the authors were able to successfully match. Compared with the matched control group, telepsychiatry recipients were more likely to receive 30-day outpatient follow-up (46% versus 16%, $p<.001$) and 90-day outpatient follow-up (54% versus 20%, $p<.001$). Telepsychiatry recipients were less likely than the control group to be admitted to the hospital during the index ED visit (11% versus 22%, $p<.001$). The combined effect of having a telepsychiatry consult during the index ED visit was a reduction of .86 days in inpatient length of stay. Thirty-day inpatient costs were \$2,336 ($p=.04$) lower for the telepsychiatry versus the control group, but 30-day total health care costs were not statistically different. **CONCLUSIONS:** Telepsychiatry delivered in the ED through a centralized coordinated

program has great promise for improving linkage with outpatient mental health services while reducing inpatient utilization and hospital costs.

Nelson, R. E., et al. (2016). "The cost-effectiveness of telestroke in the Pacific Northwest region of the USA." J Telemed Telecare **22**(7): 413-421.

INTRODUCTION: Using real-world data from the Providence Oregon Telestroke Network, we examined the cost-effectiveness of telestroke from both the spoke and hub perspectives by level of financial responsibility for these costs and by patient stroke severity. **METHODS:** We constructed a decision analytic model using patient-level clinical and financial data from before and after telestroke implementation. Effectiveness was measured as quality-adjusted life years (QALYs) and was combined with cost per patient outcomes to calculate incremental cost effectiveness ratios (ICERs). Outcomes were generated (a) overall; (b) by stroke severity, via the National Institute of Health Stroke Scale (NIHSS) at time of arrival, defined as low (<5), medium (5-14) and high (>15); and (c) by percentage of implementation costs paid by spokes (0%, 50%, 100%). **RESULTS:** Data for 864 patients, 98 pre- and 766 post-implementation, were used to parameterize our model. From the spoke perspective, telestroke had ICERs of US\$1322/QALY, US\$25,991/QALY and US\$50,687/QALY when responsible for 0%, 50%, and 100% of these costs, respectively. Overall, the ICER ranged from US\$22,363/QALY to US\$71,703/QALY from the hub perspective. **CONCLUSIONS:** Our results support previous models showing good value, overall. However, costs and ICERs varied by stroke severity, with telestroke being most cost-effective for severe strokes. Telestroke was least cost effective for the spokes if spokes paid for more than half of implementation costs.

Nesbitt, T. S., et al. (2000). "Development of a telemedicine program." Western Journal of Medicine **173**: 169-174, 165 tabl.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1071081/pdf/wjm1730169A.pdf>

Neufeld, J. D. et Doarn, C. R. (2015). "Telemedicine Spending by Medicare: A Snapshot from 2012." Telemed J E Health **21**(8): 686-693.

BACKGROUND: Medicare has been one of the principal payers for healthcare services delivered via telemedicine to rural beneficiaries since 1997. Early projections of the cost of covering telemedicine for Medicare beneficiaries made legislators cautious to take on such a large obligation, but subsequent reports showed actual expenditures to be far below early estimates. As interest in expanding Medicare's coverage for services delivered via telemedicine grows, further examination of the extent of telemedicine use within the Medicare program and the costs associated with this use is warranted. **MATERIALS AND METHODS:** Medicare claims data from 2012 were examined. All valid claims associated with a Current Procedural Terminology code and modifier indicative of delivery via telemedicine were extracted and linked to the state of origin using carrier codes. Claims were summarized by clinical procedure code, medical specialty, and state. Expenditures were also calculated on a per member per month basis by state to compare the relative penetration of telemedicine among states. **RESULTS:** Total Medicare telemedicine-related expenditures in 2012 were found to be a little over \$5 million, 65.2% of the total allowed telemedicine-related charges of \$7.7 million. This figure represents an expenditure of approximately \$0.09 annually per Medicare enrollee, or about three-quarters of a penny per member per month. Wide variation was found among states in telemedicine use. Mental health services and service providers accounted for nearly 70% of total telemedicine-related professional fees, and originating site facility fee claims accounted for only 28% of the total number of paid claims. **CONCLUSIONS:** Medicare spending on telemedicine is largely for mental health services and represents only a tiny fraction of overall Medicare spending. Adoption of telehealth is driven by multiple factors beyond need and rurality.

Neufeld, J. D., et al. (2016). "State Policies Influence Medicare Telemedicine Utilization." Telemed J E Health **22**(1): 70-74.

BACKGROUND: Medicare policy regarding telemedicine reimbursement has changed little since 2000. Many individual states, however, have added telemedicine reimbursement for either Medicaid and/or commercial payers over the same period. Because telemedicine programs must serve patients from all

or most payers, it is likely that these state-level policy changes have significant impacts on telemedicine program viability and utilization of services from all payers, not just those services and payers affected directly by state policy. This report explores the impact of two significant state-level policy changes—one expanding Medicaid telemedicine coverage and the other introducing telemedicine parity for commercial payers—on Medicare utilization in the affected states. MATERIALS AND METHODS: Medicare claims data from 2011-2013 were examined for states in the Great Lakes region. All valid claims for live interactive telemedicine professional fees were extracted and linked to their states of origin. Allowed encounters and expenditures were calculated in total and on a per 1,000 members per year basis to standardize against changes in the Medicare population by state and year. RESULTS: Medicare telemedicine encounters and professional fee expenditures grew sharply following changes in state Medicaid and commercial payer policy in the examined states. Medicare utilization in Illinois grew by 173% in 2012 (over 2011) following Medicaid coverage expansion, and Medicare utilization in Michigan grew by 118% in 2013 (over 2012) following adoption of telemedicine parity for commercial payers. By contrast, annual Medicare telemedicine utilization growth in surrounding states (in which there were no significant policy changes during these years) varied somewhat but showed no discernible pattern. CONCLUSIONS: Although Medicare telemedicine policy has changed little since its inception, changes in state policies with regard to telemedicine reimbursement appear to have significant impacts on the practical viability of telemedicine programs that bill Medicare for telemedicine services.

Ney, J. P. (2013). "Changes to CMS reimbursement rules for intraoperative neurophysiological monitoring: implications for telemedicine." *Telemed J E Health* **19**(10): 791-793.

Intraoperative neurophysiological monitoring (IONM) is used as an adjunct for surgeries that pose risk to nervous system structures. IONM is performed by a technologist in the operating room and is overseen by a highly trained fellowship-trained physician clinical neurophysiologist. Telemedicine has allowed the professional oversight component to be done remotely, with reimbursement for multiple simultaneous cases. Recent changes to Current Procedure Terminology coding and Medicare reimbursement policies provide options only for exclusive 1:1 technologist:oversight physician billing. This policy change may create profound repercussions in the practice of telemedicine by actively discouraging the leveraging of highly specialized and scarce expertise through on-site physician extenders.

Nguyen, K. H., et al. (2015). "Cost-Effectiveness Analysis of a Mobile Ear Screening and Surveillance Service versus an Outreach Screening, Surveillance and Surgical Service for Indigenous Children in Australia." *PLoS One* **10**(9): e0138369.

Indigenous Australians experience a high rate of ear disease and hearing loss, yet they have a lower rate of service access and utilisation compared to their non-Indigenous counterparts. Screening, surveillance and timely access to specialist ear, nose and throat (ENT) services are key components in detecting and preventing the recurrence of ear diseases. To address the low access and utilisation rate by Indigenous Australians, a collaborative, community-based mobile telemedicine-enabled screening and surveillance (MTESS) service was trialled in Cherbourg, the third largest Indigenous community in Queensland, Australia. This paper aims to evaluate the cost-effectiveness of the MTESS service using a lifetime Markov model that compares two options: (i) the Deadly Ears Program alone (current practice involving an outreach ENT surgical service and screening program), and (ii) the Deadly Ears Program supplemented with the MTESS service. Data were obtained from the Deadly Ears Program, a feasibility study of the MTESS service and the literature. Incremental cost-utility ratios were calculated from a societal perspective with both costs (in 2013-14 Australian dollars) and quality-adjusted life years (QALYs) discounted at 5% annually. The model showed that compared with the Deadly Ears Program, the probability of an acceptable cost-utility ratio at a willingness-to-pay threshold of \$50,000/QALY was 98% for the MTESS service. This cost effectiveness arises from preventing hearing loss in the Indigenous population and the subsequent reduction in associated costs. Deterministic and probability sensitivity analyses indicated that the model was robust to parameter changes. We concluded that the MTESS service is a cost-effective strategy. It presents an opportunity to resolve major issues confronting Australia's health system such as the inequitable provision and access to quality healthcare for rural and remotes communities, and for Indigenous Australians. Additionally, it may

encourage effective health service delivery at a time when the healthcare funding and workforce capacity are limited.

Nundy, S., et al. (2014). "Mobile phone diabetes project led to improved glycemic control and net savings for Chicago plan participants." *Health Aff (Millwood)* **33**(2): 265-272.

Even with the best health care available, patients with chronic illnesses typically spend no more than a few hours a year in a health care setting, while their outcomes are largely determined by their activities during the remaining 5,000 waking hours of the year. As a widely available, low-cost technology, mobile phones are a promising tool to use in engaging patients in behavior change and facilitating self-care between visits. We examined the impact of a six-month mobile health (mHealth) demonstration project among adults with diabetes who belonged to an academic medical center's employee health plan. In addition to pre-post improvements in glycemic control ($p=0.01$) and patients' satisfaction with overall care ($p=0.04$), we observed a net cost savings of 8.8 percent. Those early results suggest that mHealth programs can support health care organizations' pursuit of the triple aim of improving patients' experiences with care, improving population health, and reducing the per capita cost of health care

Ogasawara, K. et Abe, T. (2013). "WTP (willingness to pay) for tele-health consultation service in Hokkaido, Japan." *Stud Health Technol Inform* **192**: 1026.

We developed a tele-health consultation system that combines a sphygmomanometer with a tele-conference system. These were placed in pharmacies and the University. We selected five pharmacies to set up a consultation room; one in a local area, two in a suburban area, and the remaining two in an urban area. Nurses with more than 5 years of clinical experience were assigned as consultants. These consultants offer health consultation but do not practice medicine. Some researchers have indicated the economic viability of at-home health management systems, but nothing has been researched on the economic viability of tele-health consultation. The objective of present study was estimated Willingness to Payment (WTP) of Tele-health consultation service. The WTP was estimated by Double-Bounded Dichotomous-Choice model. We performed logistic-regression analysis to confirm factors to affect WTP. The number of the respondent was 480. Mean WTP was calculated 495 yen and the median was 367 yen. There was significant difference for factor of "annual income", "have a willingness to use this system", and "have a child/children".

Olson, C. M. (2016). "Behavioral Nutrition Interventions Using e- and m-Health Communication Technologies: A Narrative Review." *Annu Rev Nutr* **36**: 647-664.

e- and m-Health communication technologies are now common approaches to improving population health. The efficacy of behavioral nutrition interventions using e-health technologies to decrease fat intake and increase fruit and vegetable intake was demonstrated in studies conducted from 2005 to 2009, with approximately 75% of trials showing positive effects. By 2010, an increasing number of behavioral nutrition interventions were focusing on body weight. The early emphasis on interventions that were highly computer tailored shifted to personalized electronic interventions that included weight and behavioral self-monitoring as key features. More diverse target audiences began to participate, and mobile components were added to interventions. Little progress has been made on using objective measures rather than self-reported measures of dietary behavior. A challenge for nutritionists is to link with the private sector in the design, use, and evaluation of the many electronic devices that are now available in the marketplace for nutrition monitoring and behavioral change.

Øvretveit, J. (2017). "Digital Technologies Supporting Person-Centered Integrated Care – A Perspective." *Int J Integr Care* **17**(4).

Pande, R. L., et al. (2015). "Leveraging remote behavioral health interventions to improve medical outcomes and reduce costs." *Am J Manag Care* **21**(2): e141-151.

OBJECTIVE: The dramatic rise in healthcare expenditures calls for innovative and scalable strategies to achieve measurable, near-term improvements in health. Our objective was to determine whether a

remotely delivered behavioral health intervention could improve medical health, reduce hospital admissions, and lower cost of care for individuals with a recent cardiovascular event. **STUDY DESIGN:** This retrospective observational cohort study included members of a commercial health plan referred to participate in AbilTo's Cardiac Health Program. AbilTo is a national provider of telehealth, behavioral change programs for high risk medical populations. **METHODS:** The program is an 8-week behavioral health intervention delivered by a licensed clinical social worker and a behavioral coach via phone or secure video. **RESULTS:** Among the 201 intervention and 180 comparison subjects, the study found that program participants had significantly fewer all-cause hospital admissions in 6 months (293 per 1000 persons/year vs 493 per 1000 persons/year in the comparison group) resulting in an adjusted percent reduction of 31% ($P = .03$), and significantly fewer total hospital days (1455 days per 1000 persons/year vs 3933 per 1000 persons/year) with an adjusted percent decline of 48% ($P = .01$). This resulted in an overall savings in the cost of care even after accounting for total program costs. **CONCLUSIONS:** Successful patient engagement in a national, remotely delivered behavioral health intervention can reduce medical utilization in a targeted cardiac population. A restored focus on tackling barriers to behavior change in order to improve medical health is an effective, achievable population health strategy for reducing health costs in the United States.

Pare, G., et al. (2016). "Impacts of a Large Decentralized Telepathology Network in Canada." Telemed J E Health **22**(3): 246-250.

BACKGROUND: Telepathology is a fast growing segment of the telemedicine field. As of yet, no prior research has investigated the impacts of large decentralized telepathology projects on patients, clinicians, and healthcare systems. This study aims to fill this gap. We report a benefits evaluation study of a large decentralized telepathology project deployed in Eastern Quebec, Canada whose main objective is to provide continuous coverage of intraoperative consultations in remote hospitals without pathologists on-site. The project involves 18 hospitals, making it one of the largest telepathology networks in the world. **MATERIALS AND METHODS:** We conducted 43 semistructured interviews with several telepathology users and hospital managers. Archival data on the impacts of the telepathology project (e.g., number of service disruptions, average time between initial diagnosis and surgery) were also extracted and analyzed. **RESULTS:** Our findings show that no service disruptions were recorded in hospitals without pathologists following the deployment of telepathology. Surgeons noted that the use of intraoperative consultations enabled by telepathology helped avoid second surgeries and improved accessibility to care services. Telepathology was also perceived by our respondents as having positive impacts on the remote hospitals' ability to retain and recruit surgeons. **CONCLUSIONS:** The observed benefits should not leave the impression that implementing telepathology is a trivial matter. Indeed, many technical, human, and organizational challenges may be encountered. Telepathology can be highly useful in regional hospitals that do not have a pathologist on-site. More research is needed to investigate the challenges and benefits associated with large decentralized telepathology networks.

Pare, G., et al. (2013). "Home telemonitoring for chronic disease management: an economic assessment." Int J Technol Assess Health Care **29**(2): 155-161.

OBJECTIVES: There have been very few assessments of the economics of home telemonitoring, and the quality of evidence has often been weakened by methodological flaws. This has made it difficult to compare telehomecare with traditional home care for the chronic diseases studied. This economic analysis is an attempt to address this gap in the literature. **METHODS:** We have analyzed the consumption of healthcare services by 95 patients with various chronic diseases over a 21-month period, that is, 12 months before, 4 months during home telemonitoring use, and over 5 months after withdraw of the technology. **RESULTS:** Our findings indicate significant benefits to the home telemonitoring program as evidenced by large reductions in number of hospitalizations, length of average hospital stay, and, to a lesser extent, number of emergency room visits. Contrary to expectations, however, the number of home visits by nurses increased both during and after the telemonitoring intervention. In terms of the financial analysis, the telehomecare program resulted in significant savings: the equivalent of over CAD1,557 per patient as calculated on an annualized basis. This represents a net gain of 41 percent as compared to traditional home care. **CONCLUSIONS:** While

the present economic analysis led to positive results, additional assessments should be conducted to confirm the cost-effectiveness of this mode of care delivery.

Park, J., Erikson, C., Han, X., et al. (2018). "Are State Telehealth Policies Associated With The Use Of Telehealth Services Among Underserved Populations?" *Health Aff (Millwood)* **37**(12): 2060-2068.

Using four years of data from a nationally representative consumer survey, we examined trends in telehealth usage over time and the role state telehealth policies play in telehealth use. Telehealth use increased dramatically during the period 2013-16, with new modalities such as live video, live chat, texting, and mobile apps gaining traction. The rate of live video communication rose from 6.6 percent in June 2013 to 21.6 percent in December 2016. However, underserved populations-including Medicaid, low-income, and rural populations-did not use live video communication as widely as other groups did. Less restrictive state telehealth policies were not associated with increased usage overall or among underserved populations. This study suggests that state efforts alone to remove barriers to using telehealth might not be sufficient for increasing use, and new incentives for providers and consumers to adopt and use telehealth may be needed.

Pearl, R. (2014). "Kaiser Permanente Northern California: current experiences with internet, mobile, and video technologies." *Health Aff (Millwood)* **33**(2): 251-257.

The US health care system has been slow to adopt Internet, mobile, and video technologies, which have the capability to engage patients in their own care, increase patients' access to providers, and possibly improve the quality of care while reducing costs. Nevertheless, there are some pockets of progress, including Kaiser Permanente Northern California (KPNC). In 2008 KPNC implemented an inpatient and ambulatory care electronic health record system for its 3.4 million members and developed a suite of patient-friendly Internet, mobile, and video tools. KPNC has achieved many successes. For example, the number of virtual "visits" grew from 4.1 million in 2008 to an estimated 10.5 million in 2013. This article describes KPNC's experience with Internet, mobile, and video technologies and the obstacles faced by other health care providers interested in embracing them. The obstacles include the predominant fee-for-service payment model, which does not reimburse for virtual visits; the considerable investment needed to deploy these technologies; and physician buy-in.

Piccini, J. P., et al. (2016). "Impact of remote monitoring on clinical events and associated health care utilization: A nationwide assessment." *Heart Rhythm* **13**(12): 2279-2286.

BACKGROUND: Remote monitoring (RM) of cardiac implantable electronic devices (CIEDs) improves patient survival. However, whether RM reduces health care utilization is unknown. **OBJECTIVE:** The purpose of this study was to determine whether RM was associated with reduced hospitalization and costs in clinical practice. **METHODS:** We conducted a nationwide cohort study using the Truven Health Analytics MarketScan database. Patients implanted with a CIED between March 31, 2009, and April 1, 2012, were included. All-cause hospitalization events were compared between those using RM and those not using RM by using Cox proportional hazards methods with Andersen-Gill extension and propensity scoring. We also compared health care costs (payments >30 days after CIED implantation). **RESULTS:** Overall, there were 92,566 patients (mean age 72 +/- 13 years; 58,140 [63%] men) with a mean follow-up of 19 +/- 12 months, including 54,520 (59%) pacemaker, 27,816 (30%) implantable cardioverter-defibrillator, and 10,230 (11%) cardiac resynchronization therapy patients. Only 37% of patients (34,259) used RM. Patients with RM had Charlson Comorbidity Index values similar to those not using RM but had lower adjusted risk of all-cause hospitalization (adjusted hazard ratio 0.82; 95% confidence interval 0.80-0.84; P < .001) and shorter mean length of hospitalization (5.3 days vs 8.1 days; P < .001) during follow-up. RM was associated with a 30% reduction in hospitalization costs (\$8720 mean cost per patient-year vs \$12,423 mean cost per patient-year). For every 100,000 patient-years of follow-up, RM was associated with 9810 fewer hospitalizations, 119,000 fewer days in hospital, and \$370,270,000 lower hospital payments. **CONCLUSION:** RM is associated with reductions in hospitalization and health care utilization. Since only about a third of patients with CIEDs routinely use RM, this represents a major opportunity for quality improvement.

Razavi, H., et al. (2017). "Increasing the impact of teleophthalmology in Australia: Analysis of structural and economic drivers in a state service." *Aust J Rural Health* **25**(1): 45-52.

PROBLEM: Despite its potential to improve service provision for country patients, teleophthalmology is currently underused in Australia. There is an associated lack of cost-effectiveness data for teleophthamology. **DESIGN:** Retrospective and prospective hospital-based clinical audits of 5456 patients; descriptive survey of available telehealth equipment in 129 regional facilities; cost calculations for teleophthalmology, patient transfers and outreach services. **SETTING:** Primary (optometry, general practice [GP], Aboriginal Medical Service [AMS]) and secondary (hospital) sites in regional Western Australia; a tertiary hospital in Perth. **KEY MEASURES FOR IMPROVEMENT:** Proportion of patients suitable for teleophthalmology; proportion of regional practices with telehealth technology; capital expenditure to equip regional practices for teleophthalmology; total savings from increased utilisation of teleophthalmology. **STRATEGIES FOR CHANGE:** Advocacy for funding, regulatory, training and infrastructure recommendations, in order to support efficient models of teleophthalmology. **EFFECTS OF CHANGE:** A total of 15% and 24% of urgent patient transfers and outreach consultations, respectively, were found to be suitable for teleophthalmology, equating to a potential total cost saving of \$1.1 million/year. Capital expenditure required for basic telehealth equipment was negligible for optometrists, compared to \$20 500 per GP/AMS practice. Successful advocacy led to funding, training and policy changes to support optometry-led teleophthalmology for country patients in Australia. **LESSONS LEARNT:** Public-private partnerships can result in significant cost-savings for the Australian health system. Targeted, evidence-based advocacy can inform government health reforms.

Reeder, B., et al. (2013). "Older adults' satisfaction with a medication dispensing device in home care." *Inform Health Soc Care* **38**(3): 211-222.

INTRODUCTION: Older adults with multiple chronic conditions face the complex task of medication management involving multiple medications of varying doses at different times. Advances in telehealth technologies have resulted in home-based devices for medication management and health monitoring of older adults. We examined older adults' perceptions of a telehealth medication dispensing device as part of a clinical trial involving home healthcare clients, nurse coordination and use of the medication dispensing device. **METHODS:** Ninety-six frail older adult participants who used the medication dispensing device for 12 months completed a satisfaction survey related to perceived usefulness and reliability. Results were analyzed and grouped by themes in the following areas: Ease of Use, Reliability, Medication Management Assistance, Routine Task Performance and Acceptability. **RESULTS:** Nearly all participants perceived the medication dispensing device as very easy to use, very reliable and helpful in the management of their medications. Eighty-four percent of participants expressed a desire to use the machine in the future. **CONCLUSION:** The technology-enhanced medication management device in this study is an acceptable tool for older adults to manage medication in collaboration with home care nurses. Improved usability and cost models for medication dispensers are areas for future research.

Reese, R. M., et al. (2015). "Preliminary Evidence for the Integrated Systems Using Telemedicine." *Telemed J E Health* **21**(7): 581-587.

BACKGROUND: Autism affects as many as 1 in 68 children in the United States. Early identification and access to intervention services promote improved outcomes for children with autism and other developmental delays. Children living in rural and underserved areas have limited access to such services and are diagnosed later than those living more suburban and urban areas. Our Integrated Systems Using Telemedicine (ISUT) Model uses a cost-effective method for families to access diagnostic and other specialty care through telemedicine. This model links families, trained early intervention providers and educators, and university-based medical professionals. **MATERIALS AND METHODS:** We trained autism diagnostic teams throughout the state who completed diagnostic measures and connected to university medical center teams for final diagnosis of autism and coexisting conditions. We gathered preliminary data to measure the impact of the ISUT model on access to services, potential cost savings for families, and parent satisfaction with the model. **RESULTS:** Preliminary data indicate that our ISUT model provided families in rural and underserved areas

improved access to diagnostic services as well as cost savings for travel. Our satisfaction data indicate that parents are equally satisfied with services received through the ISUT and through the University-Based Medical Center Team Model. CONCLUSIONS: The ISUT model provides a unique collaboration among the family, educational system, autism experts in the community, and the university medical center autism team while providing a cost-effective means for families to access specialty care while promoting coordination of care within the community.

Ricciardi, L., et al. (2013). "A national action plan to support consumer engagement via e-health." Health Aff (Millwood) **32**(2): 376-384.

Patient-centered care is considered one pillar of a high-performing, high-quality health care system. It is a key component of many efforts to transform care and achieve better population health. Expansion of health information technology and consumer e-health tools--electronic tools and services such as secure e-mail messaging between patients and providers, or mobile health apps--have created new opportunities for individuals to participate actively in monitoring and directing their health and health care. The Office of the National Coordinator for Health Information Technology in the Department of Health and Human Services leads the strategy to increase electronic access to health information, support the development of tools that enable people to take action with that information, and shift attitudes related to the traditional roles of patients and providers. In this article we review recent evidence in support of consumer e-health and present the federal strategy to promote advances in consumer e-health to increase patient engagement, improve individual health, and achieve broader health care system improvements.

Riley, W. T., et al. (2015). "Program evaluation of remote heart failure monitoring: healthcare utilization analysis in a rural regional medical center." Telemed J E Health **21**(3): 157-162.

BACKGROUND: Remote monitoring for heart failure (HF) has had mixed and heterogeneous effects across studies, necessitating further evaluation of remote monitoring systems within specific healthcare systems and their patient populations. "Care Beyond Walls and Wires," a wireless remote monitoring program to facilitate patient and care team co-management of HF patients, served by a rural regional medical center, provided the opportunity to evaluate the effects of this program on healthcare utilization. MATERIALS AND METHODS: Fifty HF patients admitted to Flagstaff Medical Center (Flagstaff, AZ) participated in the project. Many of these patients lived in underserved and rural communities, including Native American reservations. Enrolled patients received mobile, broadband-enabled remote monitoring devices. A matched cohort was identified for comparison. RESULTS: HF patients enrolled in this program showed substantial and statistically significant reductions in healthcare utilization during the 6 months following enrollment, and these reductions were significantly greater compared with those who declined to participate but not when compared with a matched cohort. CONCLUSIONS: The findings from this project indicate that a remote HF monitoring program can be successfully implemented in a rural, underserved area. Reductions in healthcare utilization were observed among program participants, but reductions were also observed among a matched cohort, illustrating the need for rigorous assessment of the effects of HF remote monitoring programs in healthcare systems.

Rosen, A. R., et al. (2016). "Landscape of business models in teledermatology." Cutis **97**(4): 302-304.

Effective business models for teledermatology must be implemented to make the practice a feasible option for dermatologists to deliver care. This study sought to detect and report types of teledermatology business models in practice. We interviewed 19 private and academic dermatologists who have been reimbursed for teledermatology services. Most respondents described teledermatology business models fitting 4 categories-standard fee-for-service reimbursement from insurance, capitated service contracts, per-case service contracts, and direct to consumer-which are described in this article. We also anticipate new teledermatology business models will be needed as technology and insurance reimbursements evolve.

Rosen, D., et al. (2016). "Increasing self-knowledge: Utilizing tele-coaching for patients with congestive heart failure." Soc Work Health Care **55**(9): 711-719.

The objective was to assess self-care knowledge changes with dually eligible Medicare and Medicaid patients diagnosed with congestive heart failure (CHF), who received a telecoaching protocol integrating symptom monitoring with face-to-face video chat with a social worker. We recruited 45 patients with CHF from a regional managed care organization. Sessions via a Health Insurance Portability and Accountability Act-compliant tablet-based platform focused on educational information designed to improve patient self-care. Social workers administered the 13-item Member Confidence Measure (MCM) at baseline and at a 30-day follow-up period. Scores were recorded to measure differences in patients' understanding of CHF and related symptoms, their knowledge of the disease, and the behaviors necessary to prevent their symptoms from getting worse. Over the 30-day period, scores significantly ($p < .01$) increased on the total scale score and specific confidence measure subscales (symptom recognition, medication adherence, medical attention, healthy choices, and safety). Gender, race, and age were unrelated to these improvements. In addition, effect sizes for the sub-scales ranged from .54 to 1.08; the effect size of the intervention as expressed by the total scale score was 1.12. Overall, patients increased knowledge over a 30-day period. Tele-coaching by social workers holds promise as a feasible model for health education for high-risk populations.

Rubin, M. N. et Demaerschalk, B. M. (2014). "The use of telemedicine in the management of acute stroke." *Neurosurg Focus* **36**(1): E4.

Cerebrovascular disease, including acute ischemic stroke, remains a major public health problem in the US and throughout the world. There has been a concerted effort to apply evidence-based practices to stroke care to improve primary and secondary prevention as well as poststroke outcomes. Geography and workforce shortages contribute to a disparity in stroke care, however, among the substantial proportion of the US population that lives outside the reach of an acute stroke-ready hospital or a primary or comprehensive stroke center. In an attempt to combat the rural-to-urban disparity and expand the availability of best stroke practices, Levine and Gorman proposed the development of telemedical outreach for acute stroke evaluation and management, which they called "telestroke." Since then, the practice of telestroke has been found to have a high interrater agreement with a bedside assessment of the National Institutes of Health Stroke Scale score, to enhance correct thrombolysis decision making as compared with telephone-only consultation, and to be cost-effective. In light of these findings and the perception of benefit by acute stroke providers and patients, there has been growing interest in and a rapid expansion of telestroke networks in the US and internationally. There are legal and financial barriers to more widespread use of telemedicine in general, including telestroke. Further research is needed to understand the potential merits of telestroke infrastructure for the many phases of stroke care including poststroke hospitalization, prevention of complications, enhancing secondary prevention, and education of patients and providers.

Russo, J. E., et al. (2016). "VA Telemedicine: An Analysis of Cost and Time Savings." *Telemed J E Health* **22**(3): 209-215.

INTRODUCTION: The Veterans Affairs (VA) healthcare system provides beneficiary travel reimbursement ("travel pay") to qualifying patients for traveling to appointments. Travel pay is a large expense for the VA and hence the U.S. Government, projected to cost nearly \$1 billion in 2015. Telemedicine in the VA system has the potential to save money by reducing patient travel and thus the amount of travel pay disbursed. In this study, we quantify this savings and also report trends in VA telemedicine volumes over time. **MATERIALS AND METHODS:** All telemedicine visits based at the VA Hospital in White River Junction, VT between 2005 and 2013 were reviewed (5,695 visits). Travel distance and time saved as a result of telemedicine were calculated. Clinical volume in the mental health department, which has had the longest participation in telemedicine, was analyzed. **RESULTS:** Telemedicine resulted in an average travel savings of 145 miles and 142 min per visit. This led to an average travel payment savings of \$18,555 per year. Telemedicine volume grew significantly over the study period such that by the final year the travel pay savings had increased to \$63,804, or about 3.5% of the total travel pay disbursement for that year. The number of mental health telemedicine visits rose over the study period but remained small relative to the number of face-to-face visits. A higher proportion of telemedicine visits involved new patients. **CONCLUSIONS:** Telemedicine at the VA saves

travel distance and time, although the reduction in travel payments remains modest at current telemedicine volumes.

Sabesan, S. et Kelly, J. (2014). "Are teleoncology models merely about avoiding long distance travel for patients?" *Eur J Cancer Care (Engl)* **23**(6): 745-749.

Teleoncology models are used increasingly throughout the world as a means to provide access to quality cancer care for people in rural, remote and other disadvantaged settings. Some authors have suggested that teleoncology is merely about avoiding long distance travel. In this commentary we argue that the benefits of teleoncology extend beyond those of the patients and their families to the rural health system and beyond. We draw upon the literature and results of an evaluation of the Townsville Teleoncology Network (TTN) in North Queensland, Australia to support our arguments.

Saurman, E., et al. (2014). "Assessing program efficiency: a time and motion study of the Mental Health Emergency Care - Rural Access Program in NSW Australia." *Int J Environ Res Public Health* **11**(8): 7678-7689.

The Mental Health Emergency Care-Rural Access Program (MHEC-RAP) is a telehealth solution providing specialist emergency mental health care to rural and remote communities across western NSW, Australia. This is the first time and motion (T&M) study to examine program efficiency and capacity for a telepsychiatry program. Clinical services are an integral aspect of the program accounting for 6% of all activities and 50% of the time spent conducting program activities, but half of this time is spent completing clinical paperwork. This finding emphasizes the importance of these services to program efficiency and the need to address variability of service provision to impact capacity. Currently, there is no efficiency benchmark for emergency telepsychiatry programs. Findings suggest that MHEC-RAP could increase its activity without affecting program responsiveness. T&M studies not only determine activity and time expenditure, but have a wider application assessing program efficiency by understanding, defining, and calculating capacity. T&M studies can inform future program development of MHEC-RAP and similar telehealth programs, both in Australia and overseas.

Schneider, J. A. et Holland, C. P. (2017). "eHealth Search Patterns: A Comparison of Private and Public Health Care Markets Using Online Panel Data." *J Med Internet Res* **19**(4): e117.

BACKGROUND: Patient and consumer access to eHealth information is of crucial importance because of its role in patient-centered medicine and to improve knowledge about general aspects of health and medical topics. OBJECTIVES: The objectives were to analyze and compare eHealth search patterns in a private (United States) and a public (United Kingdom) health care market. METHODS: A new taxonomy of eHealth websites is proposed to organize the largest eHealth websites. An online measurement framework is developed that provides a precise and detailed measurement system. Online panel data are used to accurately track and analyze detailed search behavior across 100 of the largest eHealth websites in the US and UK health care markets. RESULTS: The health, medical, and lifestyle categories account for approximately 90% of online activity, and e-pharmacies, social media, and professional categories account for the remaining 10% of online activity. Overall search penetration of eHealth websites is significantly higher in the private (United States) than the public market (United Kingdom). Almost twice the number of eHealth users in the private market have adopted online search in the health and lifestyle categories and also spend more time per website than those in the public market. The use of medical websites for specific conditions is almost identical in both markets. The allocation of search effort across categories is similar in both the markets. For all categories, the vast majority of eHealth users only access one website within each category. Those that conduct a search of two or more websites display very narrow search patterns. All users spend relatively little time on eHealth, that is, 3-7 minutes per website. CONCLUSIONS: The proposed online measurement framework exploits online panel data to provide a powerful and objective method of analyzing and exploring eHealth behavior. The private health care system does appear to have an influence on eHealth search behavior in terms of search penetration and time spent per website in the health and lifestyle categories. Two explanations are offered: (1) the personal incentive of medical costs in the private market incentivizes users to conduct online search; and (2) health care information is more easily accessible through health care professionals in the United Kingdom compared with the

United States. However, the use of medical websites is almost identical, suggesting that patients interested in a specific condition have a motivation to search and evaluate health information, irrespective of the health care market. The relatively low level of search in terms of the number of websites accessed and the average time per website raise important questions about the actual level of patient informedness in both the markets. Areas for future research are outlined.

Schneider, P. J. (2013). "Evaluating the impact of telepharmacy." *Am J Health Syst Pharm* **70**(23): 2130-2135.

PURPOSE: The impact of remote pharmacist review of medication orders in three small community hospitals in California was evaluated. **METHODS:** A longitudinal study was conducted in three community hospitals without 24-hour pharmacy services before and after the implementation of telepharmacy services. Override reports from automated dispensing cabinets were reviewed. Charts were reviewed for errors and potential adverse drug events. Pharmacist interventions during times when the pharmacy was closed were evaluated. Cost estimates were based on a proprietary intervention tracking program. Surveys were administered to staff nurses and pharmacists to assess concerns about medication-use safety and job satisfaction. **RESULTS:** The number of times that nurses obtained and administered medications without pharmacist review declined by 35.3% after implementation of the telepharmacy service. There was a significant reduction in the percentage of high-risk medications obtained without a pharmacist review. Three potential adverse drug events were discovered before implementing remote order review versus none in the postimplementation period. The number of pharmacist interventions increased from 15 to 98 per week after implementing remote order review by pharmacists. Estimated cost savings resulting from preventing, identifying, and resolving medication-related problems were \$261,109 per hospital in total cost saved or avoided. Nurses' survey scores reflected increased comfort with the medication-use system, patient safety, and job satisfaction. **CONCLUSION:** Remote review of medication orders by pharmacists when the hospital pharmacy was closed decreased the number of potential adverse drug events reported and improved job satisfaction among nurses.

Scott, D. M., et al. (2014). "Medication error reporting in rural critical access hospitals in the North Dakota Telepharmacy Project." *Am J Health Syst Pharm* **71**(1): 58-67.

PURPOSE: Results of a study of medication "quality-related events" (QREs) at critical access hospitals (CAHs) participating in a telepharmacy project are reported. **METHODS:** Rates and types of medication QREs (i.e., all types of drug therapy problems requiring pharmacist intervention) were evaluated at 17 CAHs receiving telepharmacy services from a central order-entry site in the North Dakota Telepharmacy Project (NDTP). During the 17-month study, remote pharmacists used telepharmacy technology to review medication orders prepared at the CAH sites, identify and address QREs, and code clinical interventions. The collected data were analyzed via chi-square testing. **RESULTS:** Cumulative monthly medication orders at the CAH study sites ranged from a low of 12,535 in the first month of the study to a high of 18,257. Monthly rates of visual medication verification and clinical intervention ranged from 8.0% to 14.2% and from 1.3% to 3.1%, respectively. Overall, the most frequently identified QREs were transcription errors, which accounted for 2,389 interventions (43.3%); 2,078 interventions (37.7%) targeted prescribing-related QREs. The most frequently cited intervention codes were for dosage adjustments (n = 547), deep venous thrombosis prophylaxis (n = 437), pharmacokinetic consultation (n = 268), renal dosing (n = 182), and the prevention of minor (n = 148) and major (n = 94) adverse drug events. **CONCLUSION:** The study results indicate that the NDTP telepharmacy model is effective in identifying and resolving QREs in CAHs. The use of the telepharmacy services increased over the study period, suggesting that CAH practitioners became more comfortable using the technology on a regular basis to enhance patient safety.

Sezeur, A., et al. (2001). "Teleconsultation before chemotherapy for recently operated on patients." *American Journal of Surgery (the)* **182**: 49-51.

Shah, M. N., et al. (2016). "High-Intensity Telemedicine Decreases Emergency Department Use by Senior Living Community Residents." *Telemed J E Health* **22**(3): 251-258.

BACKGROUND: The failure to provide timely acute illness care can lead to adverse consequences or emergency department (ED) use. We evaluated the effect on ED use of a high-intensity telemedicine program that provides acute illness care for senior living community (SLC) residents. **MATERIALS AND METHODS:** We performed a prospective cohort study over 3.5 years. Six SLCs cared for by a primary care geriatrics practice were intervention facilities, with the remaining 16 being controls. Consenting patients at intervention facilities could access telemedicine for acute illness care. Patients were provided patient-to-provider, real-time, or store-and-forward high-intensity telemedicine (i.e., technician-assisted with resources beyond simple videoconferencing) to diagnose and treat acute illnesses. The primary outcome was the rate of ED use. **RESULTS:** We enrolled 494 of 705 (70.1%) subjects/proxies in the intervention group; 1,058 subjects served as controls. Control and intervention subjects visited the ED 2,238 and 725 times, respectively, with 47.3% of control and 43.4% of intervention group visits resulting in discharge home. Among intervention subjects, ED use decreased at an annualized rate of 18% (rate ratio [RR]=0.82; 95% confidence interval [CI], 0.70-0.95), whereas in the control group there was no statistically significant change in ED use (RR=1.01; 95% CI, 0.95-1.07; $p=0.009$ for group-by-time interaction). Primary care use and mortality were not significantly different. **CONCLUSIONS:** High-intensity telemedicine significantly reduced ED use among SLC residents without increasing other utilization or mortality. This alternative to traditional acute illness care can enhance access to acute illness care and should be integrated into population health programs.

Shivapathasundram, G., et al. (2012). "Using smart phone video to supplement communication of radiology imaging in a neurosurgical unit: technical note." *Neurol Res* **34**(3): 318-320.

BACKGROUND: The use of smart phones within medicine continues to grow at the same rate as mobile phone technology continues to evolve. One use of smart phones within medicine is in the transmission of radiological images to consultant neurosurgeons who are off-site in an emergency setting. In our unit, this has allowed quick, efficient, and safe communication between consultant neurosurgeon and trainees, aiding in rapid patient assessment and management in emergency situations. **OBJECTIVE:** To describe a new means of smart phone technology use in the neurosurgical setting, where the video application of smart phones allows transfer of a whole series of patient neuroimaging via multimedia messaging service to off-site consultant neurosurgeons. **METHOD/TECHNIQUE:** Using the video application of smart phones, a 30-second video of an entire series of patient neuroimaging was transmitted to consultant neurosurgeons. With this information, combined with a clinical history, accurate management decisions were made. **RESULTS:** This technique has been used on a number of emergency situations in our unit to date. Thus far, the imaging received by consultants has been a very useful adjunct to the clinical information provided by the on-site trainee, and has helped expedite management of patients. **CONCLUSION:** While the aim should always be for the specialist neurosurgeon to review the imaging in person, in emergency settings, this is not always possible, and we feel that this technique of smart phone video is a very useful means for rapid communication with neurosurgeons.

Siddiqui, J., et al. (2017). "Infectious Diseases Society of America Position Statement on Telehealth and Telemedicine as Applied to the Practice of Infectious Diseases." *Clin Infect Dis* **64**(3): 237-242.

The use of telehealth and telemedicine offers powerful tools for delivering clinical care, conducting medical research, and enhancing access to infectious diseases physicians. The Infectious Diseases Society of America (IDSA) has prepared a position statement to educate members on the use of telehealth and telemedicine technologies. The development of telehealth and telemedicine programs requires the consideration of several issues such as HIPAA, state and local licensure requirements, credentialing and privileging, scope of care, quality, and responsibility and liability. IDSA supports appropriate use of telehealth and telemedicine to provide timely, cost-effective specialty care to resource-limited populations.

Simpson, J., et al. (2000). "Evaluation of a routine telepsychiatry service." *Journal of Telemedicine and Telecare* **7**(2): 90-98, 98 tabl., 92 fig.

Slotwiner, D. et Wilkoff, B. (2013). "Cost efficiency and reimbursement of remote monitoring: a US perspective." *Europace* **15 Suppl 1**: i54-i58.

Demographic and technological changes are driving increased utilization of cardiac implantable electronic devices (CIEDs) remote monitoring. In the USA, fee-for-service model of healthcare delivery, services rendered are valued based upon time, intensity, and technical or practice expense costs. As a consequence of this perspective, and to contain spending, Medicare has grouped physician services into families. Spending within each family of services must, by law, remain budget neutral. Cardiac implantable electronic devices monitoring services, remote and in-person, are grouped into one family. As the volume of services within this family increases, the individual encounters are destined to be discounted into ever decreasing portions. However, if the value of remote monitoring is demonstrated to extend beyond the previous boundaries of in-person interrogations, a rational request can be made to reconsider the relative value of remote monitoring. Outcome data supporting the value-added benefits of remote monitoring are rapidly accumulating, including (i) patient convenience, with reduced use of office services, (ii) equal safety compared with in-person evaluation, (iii) shorter detection time to actionable events (arrhythmias, cardiovascular disease progression, and device malfunction), (iv) reduced length of stay for hospitalizations, (v) reduced inappropriate shocks, (vi) increased battery longevity, and (vii) a relative reduction in the risk of death. Fully automatic wireless technology, only recently widely implemented, will add considerable clinical efficiencies and further increase the value of remote monitoring. The U.S. challenge will be to appropriately define the relative value of CIEDs remote monitoring now that outcome data have demonstrated its value extends beyond in-person interrogation.

Smith, A. C., et al. (2012). "A review of Medicare expenditure in Australia for psychiatric consultations delivered in person and via videoconference." *J Telemed Telecare* **18**(3): 169-171.

We examined the activity (services recorded) and cost (benefits paid) of reimbursement associated with telepsychiatry services in the Australian public health-care sector. We reviewed the activity and costs administered through the government's Medicare Benefits Schedule (MBS) from July 2002 to June 2011. During this nine-year-period, almost 14 million psychiatric consultations were funded through Medicare at a cost of \$1.6 billion. Of these, 8003 were telepsychiatry consultations which cost \$934,000, i.e. the video consultations subgroup represented 0.06% of all psychiatric consultations provided and 0.06% of the total cost to the government for these services. Despite telepsychiatry being a widely reported and successful example of telehealth internationally, the uptake of telepsychiatry in Australia has been slow.

Steinhubl, S. R., et al. (2016). "Rationale and design of a home-based trial using wearable sensors to detect asymptomatic atrial fibrillation in a targeted population: The mHealth Screening To Prevent Strokes (mSToPS) trial." *Am Heart J* **175**: 77-85.

Efficient methods for screening populations for undiagnosed atrial fibrillation (AF) are needed to reduce its associated mortality, morbidity, and costs. The use of digital technologies, including wearable sensors and large health record data sets allowing for targeted outreach toward individuals at increased risk for AF, might allow for unprecedented opportunities for effective, economical screening. The trial's primary objective is to determine, in a real-world setting, whether using wearable sensors in a risk-targeted screening population can diagnose asymptomatic AF more effectively than routine care. Additional key objectives include (1) exploring 2 rhythm-monitoring strategies-electrocardiogram-based and exploratory pulse wave-based-for detection of new AF, and (2) comparing long-term clinical and resource outcomes among groups. In all, 2,100 Aetna members will be randomized 1:1 to either immediate or delayed monitoring, in which a wearable patch will capture a single-lead electrocardiogram during the first and last 2 weeks of a 4-month period beginning immediately or 4 months after enrollment, respectively. An observational, risk factor-matched control group (n = 4,000) will be developed from members who did not receive an invitation to participate. The primary end point is the incidence of new AF in the immediate- vs delayed-monitoring arms at the end of the 4-month monitoring period. Additional efficacy and safety end points will be captured at 1 and 3 years. The results of this digital medicine trial might benefit a

substantial proportion of the population by helping identify and refine screening methods for undiagnosed AF.

Stingley, S. et Schultz, H. (2014). "Helmsley trust support for telehealth improves access to care in rural and frontier areas." *Health Aff (Millwood)* **33**(2): 336-341.

Rural residents in need of health care face many challenges. In 2009 the Leona M. and Harry B. Helmsley Charitable Trust created the Rural Healthcare Program to improve access to and quality of care in areas of the upper Midwest challenged by health care workforce shortages and low population density. The program has focused its efforts on telehealth in seven upper Midwestern states. Since 2009 the Rural Healthcare Program has approved \$22 million in grants to eighty-five rural hospitals to implement eEmergency services. The service's videoconferencing technology connects rural emergency department staff with emergency physicians and nurses located at the service's "hub." Initial analyses indicate that eEmergency has helped participating rural hospitals increase patients' access to specialists, increase the use of evidence-based treatment, decrease time to transfer a patient to a facility able to provide a higher level of care, and reduce unnecessary patient transfers. This article describes the health care challenges rural communities face and the telehealth projects supported by the Helmsley Trust's Rural Healthcare Program.

Stoyanov, N. et Paul, V. (2012). "Clinical use of telemonitoring in chronic heart failure: keeping up with the times or misuse of time?" *Curr Heart Fail Rep* **9**(1): 75-80.

Close follow-up of patients with severe heart failure, especially after hospital discharge, has been shown to impact the mortality and readmission rates in this patient population. Monitoring of the patients' physiological status is important for predicting a potential heart failure decompensation. Earlier studies on structured telephone support and telemonitoring suggested a clear benefit on mortality and heart failure admissions, though recent large randomized controlled trials have been neutral. This review looks into the possible reasons for discrepancies in the outcomes. Remote monitoring of implantable cardiac devices is becoming increasingly utilized in a proportion of patients for device follow-up, and recent technology advances have suggested utility of certain device algorithms in detecting heart failure decompensations. Implantable hemodynamic monitors also show promise in this sphere, though have limited evidence at this stage, and further development in the technology is likely before they become part of routine practice.

Svec, D., et al. (2015). "Hospitalist intervention for appropriate use of telemetry reduces length of stay and cost." *J Hosp Med* **10**(9): 627-632.

BACKGROUND: Telemetry monitoring is a widely used, labor-intensive, and often-limited resource. Little is known of the effectiveness of methods to guide appropriate use. OBJECTIVE: Our intervention for appropriate use included: (1) a hospitalist-led, daily review of bed utilization, (2) hospitalist-driven education module for trainees, (3) quarterly feedback of telemetry usage, and (4) financial incentives. DESIGN/METHODS: Hospitalists were encouraged to discuss daily telemetry utilization on rounds. A module on appropriate telemetry usage was taught by hospitalists during the intervention period (January 2013-August 2013) on medicine wards. Pre- and post-evaluations measured changes regarding telemetry use. We compared hospital bed-use data between the baseline period (January 2012-December 2012), intervention period, and extension period (September 2014-March 2015). During the intervention period, hospital bed-use data were sent to the hospitalist group quarterly. Financial incentives were provided after a decrease in hospitalist telemetry utilization. SETTING: Stanford Hospital, a 444-bed, academic medical center in Stanford, California. RESULTS: Hospitalists saw reductions for both length of stay (LOS) (2.75 vs 2.13 days, $P = 0.005$) and total cost (22.5% reduction) for telemetry bed utilization in the intervention period. Nonhospitalists telemetry bed utilization remained unchanged. We saw significant improvements in trainee knowledge of the most cost-saving action ($P = 0.002$) and the least cost-saving action ($P = 0.003$) in the pre- and post-evaluation analyses. Results were sustained in the hospitalist group, with telemetry LOS of 1.93 days in the extension period. CONCLUSIONS: A multipronged, hospitalist-driven intervention to improve appropriate use of telemetry reduces LOS and cost, and increases knowledge of cost-saving actions among trainees.

Switzer, J. A., et al. (2013). "Cost-effectiveness of hub-and-spoke telestroke networks for the management of acute ischemic stroke from the hospitals' perspectives." *Circ Cardiovasc Qual Outcomes* **6**(1): 18-26.

BACKGROUND: A hub-and-spoke telestroke network is an effective way to extend quality acute stroke care to remote hospitals and to improve patient outcomes. This study assessed the cost-effectiveness of a telestroke network in the management of acute ischemic stroke from the perspectives of a network, a hub hospital, and a spoke hospital. **METHODS AND RESULTS:** A model was developed to compare costs and effectiveness with and without a telestroke network over a 5-year time horizon. The model considered differences in rates of teleconsultations, intravenous thrombolysis, endovascular stroke therapies, and spoke-to-hub transfers. These inputs were estimated through the use of data from Georgia Health Sciences University and Mayo Clinic telestroke networks. A network model with 1 hub and 7 spokes predicted that 45 more patients would be treated with intravenous thrombolysis and 20 more with endovascular stroke therapies per year compared with no network, leading to an estimate of 6.11 more home discharges. Each year, a telestroke network was associated with \$358 435 in cost savings; each spoke had \$109 080 in cost savings, whereas the hub had positive costs of \$405 121. However, cost sharing can be arranged so that each hospital could achieve an equal amount of cost savings (\$44 804/y). Results were sensitive to the number of spokes, marginal treatment costs in spokes and rates of transfer, and endovascular stroke therapies. **CONCLUSIONS:** The results of this study suggest that a telestroke network may increase the number of patients discharged home and reduce the costs borne by the network hospitals. Hospitals should consider their available resources and the network features when deciding whether to join or set up a network.

Thaker, D. A., et al. (2013). "Cost savings from a telemedicine model of care in northern Queensland, Australia." *Med J Aust* **199**(6): 414-417.

OBJECTIVE: To conduct a cost analysis of a telemedicine model for cancer care (teleoncology) in northern Queensland, Australia, compared with the usual model of care from the perspective of the Townsville and other participating hospital and health services. **DESIGN:** Retrospective cost-savings analysis; and a one-way sensitivity analysis performed to test the robustness of findings in net savings. **PARTICIPANTS AND SETTING:** Records of all patients managed by means of teleoncology at the Townsville Cancer Centre (TCC) and its six rural satellite centres in northern Queensland, Australia between 1 March 2007 and 30 November 2011. **MAIN OUTCOME MEASURES:** Costs for set-up and staffing to manage the service, and savings from avoidance of travel expenses for specialist oncologists, patients and their escorts, and for aeromedical retrievals. **RESULTS:** There were 605 teleoncology consultations with 147 patients over 56 months, at a total cost of \$442 276. The cost for project establishment was \$36 000, equipment/maintenance was \$143 271, and staff was \$261 520. The estimated travel expense avoided was \$762 394; this figure included the costs of travel for patients and escorts of \$658 760, aeromedical retrievals of \$52 400 and travel for specialists of \$47 634, as well as an estimate of accommodation costs for a proportion of patients of \$3600. This resulted in a net saving of \$320 118. Costs would have to increase by 72% to negate the savings. **CONCLUSION:** The teleoncology model of care at the TCC resulted in net savings, mainly due to avoidance of travel costs. Such savings could be redirected to enhancing rural resources and service capabilities. This teleoncology model is applicable to geographically distant areas requiring lengthy travel.

Thomas, S., et al. (2015). "The Cost-Effectiveness Analysis of Teleglaucoma Screening Device." *PLoS One* **10**(9): e0137913.

Glaucoma is the leading cause of irreversible vision loss and costs the American economy \$2.9 billion. Teleglaucoma remotely detects glaucoma improving access to ophthalmic care in rural areas. It helps manage glaucoma more efficiently to preserve vision and reduce healthcare costs. A cost-effectiveness analysis was conducted using healthcare provider or third-party payer perspective within rural Canada. The study population were patients at-risk of glaucoma which includes those with diabetes and/or hypertension, family history of glaucoma, adults older than 50 years, and concurrent ocular conditions in rural Alberta. Markov modelling was used to model glaucoma health states. Effectiveness was measured in Quality-Adjusted Life Years (QALYs) and costs were used in Canadian

dollars. Using TreeAge Pro 2009, incremental cost-effectiveness ratios (ICER) were developed in dollars per QALYs. Deterministic and probabilistic sensitivity analyses were performed to assess the factors affecting cost-effectiveness. Teleglaucoma had a 20% increase in ophthalmologist-referral rate; it reduced patient travel times by 61 hours and physician wait times by 30% in comparison to in-person examination (standard of care). Teleglaucoma costs \$872 per patient screened which was 80% less than in-person examination. Teleglaucoma had a greater incremental effectiveness providing an additional 0.12 QALY per patient examination. It was more sensitive (86.5%) and less specific (78.6%) than in-person examination. Teleglaucoma was more cost-effective than in-person examination with an ICER of -\$27,460/QALY. This indicated that teleglaucoma will save \$27,460 for each additional QALY gained. Long term benefits showed teleglaucoma prevents 24% cases of glaucoma blindness after 30 years. Teleglaucoma demonstrated improved health outcomes, as well as, cost benefits. It increases access to ophthalmic care and improves healthcare service efficiency, specifically in rural areas. Teleglaucoma is more cost-effective than current in-person examination and can improve the quality of life in glaucoma patients.

Titov, N., et al. (2015). "Clinical and cost-effectiveness of therapist-guided internet-delivered cognitive behavior therapy for older adults with symptoms of depression: a randomized controlled trial." *Behav Ther* **46**(2): 193-205.

UNLABELLED: Depression is a common and significant health problem among older adults. Unfortunately, while effective psychological treatments exist, few older adults access treatment. The aim of the present randomized controlled trial (RCT) was to examine the efficacy, long-term outcomes, and cost-effectiveness of a therapist-guided internet-delivered cognitive behavior therapy (iCBT) intervention for Australian adults over 60 years of age with symptoms of depression. Participants were randomly allocated to either a treatment group (n=29) or a delayed-treatment waitlist control group (n=25). Twenty-seven treatment group participants started the iCBT treatment and 70% completed the treatment within the 8-week course, with 85% of participants providing data at posttreatment. Treatment comprised an online 5-lesson iCBT course with brief weekly contact with a clinical psychologist, delivered over 8 weeks. The primary outcome measure was the Patient Health Questionnaire-9 Item (PHQ-9), a measure of symptoms and severity of depression. Significantly lower scores on the PHQ-9 (Cohen's d=2.08; 95% CI: 1.38 - 2.72) and on a measure of anxiety (Generalized Anxiety Disorder-7 Item) (Cohen's d=1.22; 95% CI: 0.61 - 1.79) were observed in the treatment group compared to the control group at posttreatment. The treatment group maintained these lower scores at the 3-month and 12-month follow-up time points and the iCBT treatment was rated as acceptable by participants. The treatment group had slightly higher Quality-Adjusted Life-Years (QALYs) than the control group at posttreatment (estimate: 0.012; 95% CI: 0.004 to 0.020) and, while being a higher cost (estimate \$52.91 95% CI: -23.8 to 128.2), the intervention was cost-effective according to commonly used willingness-to-pay thresholds in Australia. The results support the potential efficacy and cost-effectiveness of therapist-guided iCBT as a treatment for older adults with symptoms of depression. TRIAL REGISTRATION: Australian and New Zealand Clinical Trials Registry: ACTRN12611000927921; <https://www.anzctr.org.au/Trial/Registration/TrialReview.aspx?id=343384>.

Tousignant, M., et al. (2014). "Tai Chi-based exercise program provided via telerehabilitation compared to home visits in a post-stroke population who have returned home without intensive rehabilitation: study protocol for a randomized, non-inferiority clinical trial." *Trials* **15**: 42.

BACKGROUND: The incidence of strokes in industrialized nations is on the rise, particularly in the older population. In Canada, a minority of individuals who have had a stroke actually receive intensive rehabilitation because most stroke patients do not have access to services or because their motor recovery was judged adequate to return home. Thus, there is a considerable need to organize home-based rehabilitation services for everyone who has had a stroke. To meet this demand, telerehabilitation, particularly from a service center to the patient's home, is a promising alternative approach that can help improve access to rehabilitation services once patients are discharged home. METHODS/DESIGN: This non-inferiority study will include patients who have returned home post-stroke without requiring intensive rehabilitation. To be included in the study, participants will: 1) not be referred to an Intensive Functional Rehabilitation Unit, 2) have a Rankin score of 2 or 3, and 3) have a balance problem (Berg Balance Scale score between 46 and 54). Participants will be randomly

assigned to either the teletreatment group or the home visits group. Except for the delivery mode, the intervention will be the same for both groups, that is, a personalized Tai Chi-based exercise program conducted by a trained physiotherapist (45-minute session twice a week for eight consecutive weeks). The main objective of this research is to test the non-inferiority of a Tai Chi-based exercise program provided via telerehabilitation compared to the same program provided in person at home in terms of effectiveness for retraining balance in individuals who have had a stroke but do not require intensive functional rehabilitation. The main outcome of this study is balance and mobility measured with the Community Balance and Mobility Scale. Secondary outcomes include physical and psychological capacities related to balance and mobility, participants' quality of life, satisfaction with services received, and cost-effectiveness associated with the provision of both types of services. STUDY/TRIAL REGISTRATION: ClinicalTrials.gov: NCT01848080.

Tran, C., et al. (2016). "Impact of Question Content on e-Consultation Outcomes." *Telemed J E Health* **22**(3): 216-222.

BACKGROUND: By facilitating direct communication of primary care providers (PCPs) with specialists for advice, electronic consult (e-consult) services can reduce the need for patients to wait for and travel to face-to-face consultations with specialists. An association between avoiding face-to-face referrals using an e-consult service and specific content within each e-consult has not been rigorously explored. **MATERIALS AND METHODS:** Cases submitted to the Champlain Building Access to Specialists through eConsultation service between April 2011 to May 2013 were evaluated. Factors analyzed include question type (e.g., diagnosis or management), formulation (if interventions or outcomes were specified), and the addressed specialty. An avoided referral was present if the PCP indicated so in a mandatory close-out survey. A discrepancy was present if the PCP made a referral when the specialist did not indicate one was necessary, or if the PCP did not request a referral despite the specialist recommending one. **RESULTS:** There were 426 (40%) avoided referrals among 1,055 cases analyzed. Questions associated with the highest avoided referral rates included ones pertaining to diagnosis (44%), nonspecific requests for direction (44%), questions without specified interventions or outcomes (47%), and dermatology cases (49.5%). Specialists agreed on the need for a referral in 82% of cases, with most discrepancies due to the PCP making a referral without the specialist recommending one. **CONCLUSIONS:** Referral outcomes are associated with the type of question being asked, the formulation of each question, and the specialty being addressed. Discrepancies among PCPs and specialists regarding which patients require face-to-face referrals may help identify knowledge gaps and guide professional development.

Trnka, P., et al. (2015). "A retrospective review of telehealth services for children referred to a paediatric nephrologist." *BMC Nephrol* **16**: 125.

BACKGROUND: Telemedicine has emerged as an alternative mode of health care delivery over the last decade. To date, there is very limited published information in the field of telehealth and paediatric nephrology. The aim of this study was to review our experience with paediatric telenephrology in Queensland, Australia. **METHODS:** A retrospective audit of paediatric nephrology telehealth consultations to determine the nature of the telehealth activity, reasons for referral to telehealth, and to compare costs and potential savings of the telehealth service. **RESULTS:** During a ten-year period (2004 - 2013), 318 paediatric telenephrology consultations occurred for 168 patients (95 male) with the median age of 8 years (range 3 weeks to 24 years). Congenital anomalies of the kidney and urinary tract (30 %), followed by nephrotic syndrome (16 %), kidney transplant (12 %), and urinary tract infection (9 %) were the most common diagnoses. The estimated cost savings associated with telehealth were \$31,837 in 2013 (average saving of \$505 per consultation). **CONCLUSIONS:** Our study suggests that paediatric telenephrology is a viable and economic method for patient assessment and follow up. The benefits include improved access to paediatric nephrology services for patients and their families, educational opportunity for the regional medical teams, and a substantial cost saving for the health care system.

Tsuji, M., et al. (2015). "Can eHealth Reduce Medical Expenditures of Chronic Diseases?" *Stud Health Technol Inform* **210**: 246-250.

The objective of this research is to evaluate empirically the effectiveness of eHealth in Nishi-aizu Town, Fukushima Prefecture, based on a mail survey to the residents and their receipt data of National Health Insurance from November 2006 to February 2007. The residents were divided into two groups, users and non-users, and sent questionnaires to ask their characteristics or usage of the system. Their medical expenditures paid by National Health Insurance for five years from 2002 to 2006 are examined. The effects were analyzed by comparison of medical expenditures between users and non-users. The interests are focused on four chronic diseases namely heart diseases, high blood pressure, diabetes, and strokes. A regression analysis is employed to estimate the effect of eHealth to users who have these diseases and then calculate the monetary effect of eHealth on reduction of medical expenditures. The results are expected to be valid for establishment of evidence-based policy such as reimbursement from medical insurance to eHealth.

Turakhia, M. P., et al. (2017). "Healthcare Utilization and Expenditures Associated With Appropriate and Inappropriate Implantable Defibrillator Shocks." *Circ Cardiovasc Qual Outcomes* **10**(2).

BACKGROUND: In patients with implantable cardioverter-defibrillators, healthcare utilization (HCU) and expenditures related to shocks have not been quantified. **METHODS AND RESULTS:** We performed a retrospective cohort study of patients with implantable cardioverter-defibrillators identified from commercial and Medicare supplemental claims databases linked to adjudicated shock events from remote monitoring data. A shock event was defined as ≥ 1 spontaneous shocks delivered by an implanted device. Shock-related HCU was ascertained from inpatient and outpatient claims within 7 days following a shock event. Shock events were adjudicated and classified as inappropriate or appropriate, and HCU and expenditures, stratified by shock type, were quantified. Of 10 266 linked patients, 963 (9.4%) patients (61.3 \pm 13.6 years; 81% male) had 1885 shock events (56% appropriate, 38% inappropriate, and 6% indeterminate). Of these events, 867 (46%) had shock-related HCU (14% inpatient and 32% outpatient). After shocks, inpatient cardiovascular procedures were common, including echocardiography (59%), electrophysiology study or ablation (34%), stress testing (16%), and lead revision (11%). Cardiac catheterization was common (71% and 51%), but percutaneous coronary intervention was low (6.5% and 5.0%) after appropriate and inappropriate shocks. Expenditures related to appropriate and inappropriate shocks were not significantly different. **CONCLUSIONS:** After implantable cardioverter-defibrillator shock, related HCU was common, with 1 in 3 shock events followed by outpatient HCU and 1 in 7 followed by hospitalization. Use of invasive cardiovascular procedures was substantial, even after inappropriate shocks, which comprised 38% of all shocks. Implantable cardioverter-defibrillator shocks seem to trigger a cascade of health care. Strategies to reduce shocks could result in cost savings.

Upatising, B., et al. (2015). "Cost comparison between home telemonitoring and usual care of older adults: a randomized trial (Tele-ERA)." *Telemed J E Health* **21**(1): 3-8.

BACKGROUND: From 1992 to 2008, older adults in the United States incurred more healthcare expense per capita than any other age group. Home telemonitoring has emerged as a potential solution to reduce these costs, but evidence is mixed. The primary aim of the study was to evaluate whether the mean difference in total direct medical cost consequence between older adults receiving additional home telemonitoring care (TELE) (n=102) and those receiving usual medical care (UC) (n=103) were significant. Inpatient, outpatient, emergency department, decedents, survivors, and 30-day readmission costs were evaluated as secondary aim. **MATERIALS AND METHODS:** Multivariate generalized linear models (GLMs) and parametric bootstrapping method were used to model cost and to determine significance of the cost differences. We also compared the differences in arithmetic mean costs. **RESULTS:** From the conditional GLMs, the estimated mean cost differences (TELE versus UC) for total, inpatient, outpatient, and ED were -\$9,537 (p=0.068), -\$8,482 (p=0.098), -\$1,160 (p=0.177), and \$106 (p=0.619), respectively. Mean postenrollment cost was 11% lower than the prior year for TELE versus 22% higher for UC. The ratio of mean cost for decedents to survivors was 2.1:1 (TELE) versus 12.7:1 (UC). **CONCLUSIONS:** There were no significant differences in the mean total cost between the two treatment groups. The TELE group had less variability in cost of care, lower decedents to survivors cost ratio, and lower total 30-day readmission cost than the UC group.

Usher-Pines, L., Bouskill, K. E., Sousa, J., et al. (2019). Experiences of Medicaid Programs and Health Centers in Implementing Telehealth. Santa Monica The Rand: 63.

www.rand.org/pubs/research_reports/RR2564.html

Telehealth is underutilized by safety-net providers due to a range of policy, organizational, and logistical barriers. This research facilitates state-to-state learning to inform both Medicaid policy and Medicare policy and provide lessons learned.

Uscher-Pines, L., et al. (2016). "Effect of Teledermatology on Access to Dermatology Care Among Medicaid Enrollees." *JAMA Dermatol* **152**(8): 905-912.

IMPORTANCE: Access to specialists such as dermatologists is often limited for Medicaid enrollees. Teledermatology has been promoted as a potential solution; however, its effect on access to care at the population level has rarely been assessed. **OBJECTIVES:** To evaluate the effect of teledermatology on the number of Medicaid enrollees who received dermatology care and to describe which patients were most likely to be referred to teledermatology. **DESIGN, SETTING, AND PARTICIPANTS:** Claims data from a large California Medicaid managed care plan that began offering teledermatology as a covered service in April 2012 were analyzed. The plan enrolled 382801 patients in California's Central Valley, including 108480 newly enrolled patients who obtained coverage after the implementation of the Affordable Care Act. Rates of dermatology visits by patients affiliated with primary care practices that referred patients to teledermatology and those that did not were compared. Data were collected from April 1, 2012, through December 31, 2014, and assessed from March 1 to October 15, 2015. **MAIN OUTCOMES AND MEASURES:** The percentage of patients with at least 1 visit to a dermatologist (including in-person and teledermatology visits) and total visits with dermatologists (including in-person and teledermatology visits) per 1000 patients. **RESULTS:** Of the 382801 patients enrolled for at least 1 day from 2012 to 2014, 8614 (2.2%) had 1 or more visits with a dermatologist. Of all patients who visited a dermatologist, 48.5% received care via teledermatology. Among the patients newly enrolled in Medicaid, 75.7% (1474 of 1947) of those who visited a dermatologist received care via teledermatology. Primary care practices that engaged in teledermatology had a 63.8% increase in the fraction of patients visiting a dermatologist (vs 20.5% in other practices; $P < .01$). Compared with in-person dermatology, teledermatology served more patients younger vs older than 17 years (2600 of 4427 [58.7%] vs 1404 of 4187 [33.5%]), male patients (1849 of 4427 [41.8%] vs 1526 of 4187 [36.4%]), nonwhite patients (2779 of 4188 [66.4%] vs 1844 of 3478 [53.0%]), and individuals without comorbid conditions (1795 of 2464 [72.8%] vs 1978 of 3024 [65.4%]) ($P < .001$ for all comparisons). Conditions managed across settings varied; teledermatology physicians were more likely to care for viral skin lesions and acne (3405 of 7287 visits [46.7%]), whereas in-person dermatologists were more likely to care for psoriasis and skin neoplasms (10 062 of 27347 visits [36.8%]). **CONCLUSIONS AND RELEVANCE:** The offering of teledermatology appeared to improve access to dermatology care among Medicaid enrollees and played an especially important role for the newly enrolled.

Uscher-Pines, L. et Mehrotra, A. (2014). "Analysis of Teladoc use seems to indicate expanded access to care for patients without prior connection to a provider." *Health Aff (Millwood)* **33**(2): 258-264.

Despite the potential benefits of telehealth applications, little is known about their overall impact on care. This is critical because rising health care costs and a shortage of primary care providers make it likely that telehealth services will play an increasingly important role in health care delivery. To help fill this gap in knowledge, we describe early experiences with Teladoc, one of the largest telemedicine providers in the United States, which provides care directly to patients over the telephone or via the Internet. We analyzed claims data for a large California agency serving public employees that recently offered Teladoc as a covered service. The 3,701 Teladoc "visits" we studied were for a broad range of diagnostic categories, the most common of which were acute respiratory conditions, urinary tract infections, and skin problems. Compared to patients who visited a physician's office for a similar condition, adult Teladoc users were younger and less likely to have used health care before the introduction of Teladoc. Patients who used Teladoc were less likely to have a follow-up visit to any setting, compared to those patients who visited a physician's office or emergency department. Teladoc appears to be expanding access to patients who are not connected to other providers. Future

research should assess the impact of Teladoc and other telehealth interventions on the quality and cost of care.

Valsangkar, N. P., et al. (2017). "Effect of Lean Processes on Surgical Wait Times and Efficiency in a Tertiary Care Veterans Affairs Medical Center." *JAMA Surg* **152**(1): 42-47.

Importance: There are an increasing number of veterans in the United States, and the current delay and wait times prevent Veterans Affairs institutions from fully meeting the needs of current and former service members. Concrete strategies to improve throughput at these facilities have been sparse. **Objective:** To identify whether lean processes can be used to improve wait times for surgical procedures in Veterans Affairs hospitals. **Design, Setting, and Participants:** Databases in the Veterans Integrated Service Network 11 Data Warehouse, Veterans Health Administration Support Service Center, and Veterans Information Systems and Technology Architecture/Dynamic Host Configuration Protocol were queried to assess changes in wait times for elective general surgical procedures and clinical volume before, during, and after implementation of lean processes over 3 fiscal years (FYs) at a tertiary care Veterans Affairs medical center. All patients evaluated by the general surgery department through outpatient clinics, clinical video teleconferencing, and e-consultations from October 2011 through September 2014 were included. Patients evaluated through the emergency department or as inpatient consults were excluded. **Exposures:** The surgery service and systems redesign service held a value stream analysis in FY 2013, culminating in multiple rapid process improvement workshops. Multidisciplinary teams identified systemic inefficiencies and strategies to improve interdepartmental and patient communication to reduce canceled consultations and cases, diagnostic rework, and no-shows. High-priority triage with enhanced operating room flexibility was instituted to reduce scheduling wait times. General surgery department pilot projects were then implemented mid-FY 2013. **Main Outcomes and Measures:** Planned outcome measures included wait time, clinic and telehealth volume, number of no-shows, and operative volume. Paired t tests were used to identify differences in outcome measures after the institution of reforms. **Results:** Following rapid process improvement workshop project rollouts, mean (SD) patient wait times for elective general surgical procedures decreased from 33.4 (8.3) days in FY 2012 to 26.0 (9.5) days in FY 2013 ($P = .02$). In FY 2014, mean (SD) wait times were half the value of the previous FY at 12.0 (2.1) days ($P = .07$). This was a 3-fold decrease from wait times in FY 2012 ($P = .02$). Operative volume increased from 931 patients in FY 2012 to 1090 in FY 2013 and 1072 in FY 2014. Combined clinic, telehealth, and e-consultation encounters increased from 3131 in FY 2012 to 3460 in FY 2013 and 3517 in FY 2014, while the number of no-shows decreased from 366 in FY 2012 to 227 in FY 2014 ($P = .02$). **Conclusions and Relevance:** Improvement in the overall surgical patient experience can stem from multidisciplinary collaboration among systems redesign personnel, clinicians, and surgical staff to reduce systemic inefficiencies. Monitoring and follow-up of system efficiency measures and the employment of lean practices and process improvements can have positive short- and long-term effects on wait times, clinical throughput, and patient care and satisfaction.

Varney, J. E., et al. (2016). "The cost-effectiveness of hospital-based telephone coaching for people with type 2 diabetes: a 10 year modelling analysis." *BMC Health Serv Res* **16**(1): 521.

BACKGROUND: Type 2 diabetes (T2DM) is a burdensome condition for individuals to live with and an increasingly costly condition for health services to treat. Cost-effective treatment strategies are required to delay the onset and slow the progression of diabetes related complications. The Diabetes Telephone Coaching Study (DTCS) demonstrated that telephone coaching is an intervention that may improve the risk factor status and diabetes management practices of people with T2DM. Measuring the cost effectiveness of this intervention is important to inform funding decisions that may facilitate the translation of this research into clinical practice. The purpose of this study is to assess the cost-effectiveness of telephone coaching, compared to usual diabetes care, in participants with poorly controlled T2DM. **METHODS:** A cost utility analysis was undertaken using the United Kingdom Prospective Diabetes Study (UKPDS) Outcomes Model to extrapolate outcomes collected at 6 months in the DTCS over a 10 year time horizon. The intervention's impact on life expectancy, quality-adjusted life expectancy (QALE) and costs was estimated. Costs were reported from a health system perspective. A 5 % discount rate was applied to all future costs and effects. One-way sensitivity analyses were conducted to reflect uncertainty surrounding key input parameters. **RESULTS:** The

intervention dominated the control condition in the base-case analysis, contributing to cost savings of \$3327 per participant, along with non-significant improvements in QALE (0.2 QALE) and life expectancy (0.3 years). CONCLUSIONS: The cost of delivering the telephone coaching intervention continuously, for 10 years, was fully recovered through cost savings and a trend towards net health benefits. Findings of cost savings and net health benefits are rare and should prove attractive to decision makers who will determine whether this intervention is implemented into clinical practice. TRIAL REGISTRATION: ACTRN12609000075280.

Versleijen, M., et al. (2015). "A telegeriatic service in a small rural hospital: A case study and cost analysis." J Telemed Telecare **21**(8): 459-468.

INTRODUCTION: Small hospitals in rural areas usually have an insufficient caseload of frail old people to justify the regular presence of a geriatrician. This study examined the costs of providing a telegeriatic service by videoconference in a rural hospital, compared to the costs of a visiting geriatrician that travels to undertake in-person consultations. METHODS: A cost analysis was undertaken to compare the costs of the telegeriatic service model with the costs of a visiting geriatrician service model. A recently established telegeriatic service at Warwick Hospital was used as a case study. RESULTS: In the base case model (assuming four patients per round and a round-trip travel distance of 312 kilometres), an estimated AUD\$131 per patient consultation can be saved in favour of the telegeriatic service model. Key drivers of costs are the number of patients per round and the travel distance and time in the visiting geriatrician model. At a workload of four patients per round, it is less expensive to conduct a telegeriatic service than a visiting geriatrician service when the round-trip travel time exceeds 76 minutes. DISCUSSION: Even under quite conservative assumptions, a telegeriatic service offers an economically feasible approach to the delivery of specialist geriatric assessment in rural and remote settings.

Viers, B. R., et al. (2015). "Efficiency, satisfaction, and costs for remote video visits following radical prostatectomy: a randomized controlled trial." Eur Urol **68**(4): 729-735.

BACKGROUND: Telemedicine in an ambulatory surgical population remains incompletely evaluated. OBJECTIVE: To investigate patient encounters in the outpatient setting using video visit (VV) technology compared to traditional office visits (OVs). DESIGN, SETTING, AND PARTICIPANTS: From June 2013 to March 2014, 55 prescreened men with a history of prostate cancer were prospectively randomized. VVs, with the patient at home or at work, were included in the outpatient clinic calendar of urologists. INTERVENTION: Remote VV versus traditional OV. OUTCOME MEASUREMENTS AND STATISTICAL ANALYSIS: An equivalence analysis was used to assess the primary outcome, visit efficiency as measured by time studies. Secondary outcomes were patient/provider satisfaction and costs. RESULTS AND LIMITATIONS: There were 28 VVs and 27 OVs. VVs were equivalent in efficiency to relative to OVs, as measured by patient-provider face time (mean 14.5 vs 14.3min; p=0.96), patient wait time (18.4 vs 13.0min; p=0.20), and total time devoted to care (17.9 vs 17.8min; p=0.97). There were no significant differences in patient perception of visit confidentiality, efficiency, education quality, or overall satisfaction. VVs incurred lower costs, including distance traveled (median 0 vs 95 miles), travel time (0 vs 95min), missed work (0 vs 1 d), and money spent on travel (\$0 vs \$48; all p<0.0001). There was a high level of urologist satisfaction for both VVs (88%) and OVs (90%). The major limitation was sample size. CONCLUSIONS: VV in the ambulatory postprostatectomy setting may have a future role in health care delivery models. We found equivalent efficiency, similar satisfaction, but significantly reduced patient costs for VV compared to OV. Further prospective analyses are warranted. PATIENT SUMMARY: Among men with surgically treated prostate cancer, we evaluated the utility of remote video visits compared to office visits for outpatient consultation with a urologist. Video visits were associated with equivalent efficiency, similar satisfaction, and significantly lower patient costs when compared to office visits. We conclude that video visits may have a future role in health care delivery models.

Wade, V., et al. (2014). "Uptake of telehealth services funded by Medicare in Australia." Aust Health Rev **38**(5): 528-532.

OBJECTIVE: The aim of this study is to identify the extent to which the Medicare item numbers and incentives, introduced in July 2011, have been effective in stimulating telehealth activity in Australia. **METHODS:** A retrospective descriptive study utilising data on the uptake of telehealth item numbers and associated in-person services, from July 2011 to April 2014, were obtained from Medicare Australia. The main outcome measures were number of telehealth services over time, plus uptake proportionate to in-person services, by jurisdiction, by speciality, and by patient gender. **RESULTS:** Specialist consultations delivered by video communication and rebated by Medicare rose to 6000 per month, which is 0.24% of the total number of specialist consultations. The highest proportional uptake was in geriatrics and psychiatry. In 52% per cent of video consultations the patient was supported by an on-site healthcare provider, most commonly a general practitioner. There were substantial jurisdictional differences. A significantly lower percentage of female patients were rebated for item 99, which is primarily used by surgeons. **CONCLUSIONS:** Medicare rebates and incentives, which are generous by world standards, have resulted in specialist video consultations being provided to underserved areas, although gaps still remain that need new models of care to be developed. **WHAT IS KNOWN ABOUT THE TOPIC?:** Video consultations have been rebated by Medicare since July 2011 as a means of increasing access to specialist care in rural areas, aged care facilities and Aboriginal health services. **WHAT DOES THIS PAPER ADD?:** The uptake of this telehealth initiative has grown over time, but still remains low. For half the video consultations the patient was supported by an on-site healthcare provider, most commonly a general practitioner. Geriatrics and psychiatry are the specialties with the highest proportional uptake. **WHAT ARE THE IMPLICATIONS FOR PRACTITIONERS?:** New models of care with a greater focus on consultation-liaison with primary care providers need to be developed to realise the potential of this initiative and to fill continuing gaps in services.

Wade, V. A., et al. (2016). "Transitioning a home telehealth project into a sustainable, large-scale service: a qualitative study." *BMC Health Serv Res* 16: 183.

BACKGROUND: This study was a component of the Flinders Telehealth in the Home project, which tested adding home telehealth to existing rehabilitation, palliative care and geriatric outreach services. Due to the known difficulty of transitioning telehealth projects services, a qualitative study was conducted to produce a preferred implementation approach for sustainable and large-scale operations, and a process model that offers practical advice for achieving this goal. **METHODS:** Initially, semi-structured interviews were conducted with senior clinicians, health service managers and policy makers, and a thematic analysis of the interview transcripts was undertaken to identify the range of options for ongoing operations, plus the factors affecting sustainability. Subsequently, the interviewees and other decision makers attended a deliberative forum in which participants were asked to select a preferred model for future implementation. Finally, all data from the study was synthesised by the researchers to produce a process model. **RESULTS:** 19 interviews with senior clinicians, managers, and service development staff were conducted, finding strong support for home telehealth but a wide diversity of views on governance, models of clinical care, technical infrastructure operations, and data management. The deliberative forum worked through these options and recommended a collaborative consortium approach for large-scale implementation. The process model proposes that the key factor for large-scale implementation is leadership support, which is enabled by 1) showing solutions to the problems of service demand, budgetary pressure and the relationship between hospital and primary care, 2) demonstrating how home telehealth aligns with health service policies, and 3) achieving clinician acceptance through providing evidence of benefit and developing new models of clinical care. Two key actions to enable change were marketing telehealth to patients, clinicians and policy-makers, and building a community of practice. **CONCLUSIONS:** The implementation of home telehealth services is still in an early stage. Change agents and a community of practice can contribute by marketing telehealth, demonstrating policy alignment and providing potential solutions for difficult health services problems. This should assist health leaders to move from trials to large-scale services.

Watson, J. J., et al. (2016). "A statewide teleradiology system reduces radiation exposure and charges in transferred trauma patients." *Am J Surg* 211(5): 908-912.

BACKGROUND: Trauma transfer patients routinely undergo repeat imaging because of inefficiencies within the radiology system. In 2009, the virtual private network (VPN) telemedicine system was

adopted throughout Oregon allowing virtual image transfer between hospitals. The startup cost was a nominal \$3,000 per hospital. METHODS: A retrospective review from 2007 to 2012 included 400 randomly selected adult trauma transfer patients based on a power analysis (200 pre/200 post). The primary outcome evaluated was reduction in repeat computed tomography (CT) scans. Secondary outcomes included cost savings, emergency department (ED) length of stay (LOS), and spared radiation. All data were analyzed using Mann-Whitney U and chi-square tests. P less than .05 indicated significance. Spared radiation was calculated as a weighted average per body region, and savings was calculated using charges obtained from Oregon Health and Science University radiology current procedural terminology codes. RESULTS: Four-hundred patients were included. Injury Severity Score, age, ED and overall LOS, mortality, trauma type, and gender were not statistically different between groups. The percentage of patients with repeat CT scans decreased after VPN implementation: CT abdomen (13.2% vs 2.8%, $P < .01$) and cervical spine (34.4% vs 18.2%, $P < .01$). Post-VPN, the total charges saved in 2012 for trauma transfer patients was \$333,500, whereas the average radiation dose spared per person was 1.8 mSV. Length of stay in the ED for patients with Injury Severity Score less than 15 transferring to the ICU was decreased ($P < .05$). CONCLUSIONS: Implementation of a statewide teleradiology network resulted in fewer total repeat CT scans, significant savings, decrease in radiation exposure, and decreased LOS in the ED for patients with less complex injuries. The potential for health care savings by widespread adoption of a VPN is significant.

Weiner, J. P., et al. (2013). "The impact of health information technology and e-health on the future demand for physician services." *Health Aff (Millwood)* **32**(11): 1998-2004.

Arguably, few factors will change the future face of the American health care workforce as widely and dramatically as health information technology (IT) and electronic health (e-health) applications. We explore how such applications designed for providers and patients will affect the future demand for physicians. We performed what we believe to be the most comprehensive review of the literature to date, including previously published systematic reviews and relevant individual studies. We estimate that if health IT were fully implemented in 30 percent of community-based physicians' offices, the demand for physicians would be reduced by about 4-9 percent. Delegation of care to nurse practitioners and physician assistants supported by health IT could reduce the future demand for physicians by 4-7 percent. Similarly, IT-supported delegation from specialist physicians to generalists could reduce the demand for specialists by 2-5 percent. The use of health IT could also help address regional shortages of physicians by potentially enabling 12 percent of care to be delivered remotely or asynchronously. These estimated impacts could more than double if comprehensive health IT systems were adopted by 70 percent of US ambulatory care delivery settings. Future predictions of physician supply adequacy should take these likely changes into account.

Weinstein, R. S., et al. (2014). "Telemedicine, telehealth, and mobile health applications that work: opportunities and barriers." *Am J Med* **127**(3): 183-187.

There has been a spike in interest and use of telehealth, catalyzed recently by the anticipated implementation of the Affordable Care Act, which rewards efficiency in healthcare delivery. Advances in telehealth services are in many areas, including gap service coverage (eg, night-time radiology coverage), urgent services (eg, telestroke services and teleburn services), mandated services (eg, the delivery of health care services to prison inmates), and the proliferation of video-enabled multisite group chart rounds (eg, Extension for Community Healthcare Outcomes programs). Progress has been made in confronting traditional barriers to the proliferation of telehealth. Reimbursement by third-party payers has been addressed in 19 states that passed parity legislation to guarantee payment for telehealth services. Medicare lags behind Medicaid, in some states, in reimbursement. Interstate medical licensure rules remain problematic. Mobile health is currently undergoing explosive growth and could be a disruptive innovation that will change the face of healthcare in the future.

Williams, C. et Wan, T. T. (2016). "A cost analysis of remote monitoring in a heart failure program." *Home Health Care Serv Q* **35**(3-4): 112-122.

In this study, we examine the cost per outcomes of remote monitoring services in home health care. The methodology followed case matched design via retrospective chart reviews. Results of the chi-

square test suggest that there were no significant associations between the intervention and hospital readmissions, $\chi^2(2) = (1, n = 210, p\text{-value} = .71, \phi = .71)$. An independent t-test compared group means of the number of skilled nursing visits and agency costs, p-value of .002 and .000, respectively, favoring the standard of care group. Based on this data set, the home care agency lost \$153.46 for each hospital readmission in the intervention group. The cost of care complicated the agency's resources through an increase in nursing visits without offsetting the agency's investment into technology; the cost did not support remote monitoring as a financially viable option to the standard of care.

Wittenborn, J. S., et al. (2017). "Economic Evaluation of a Home-Based Age-Related Macular Degeneration Monitoring System." *JAMA Ophthalmol* **135**(5): 452-459.

Background: Medicare recently approved coverage of home telemonitoring for early detection of incident choroidal neovascularization (CNV) among patients with age-related macular degeneration (AMD), but no economic evaluation has yet assessed its cost-effectiveness and budgetary impact. Objectives: To evaluate a home-based daily visual-field monitoring system using simulation methods and to apply the findings of the Home Monitoring of the Eye study to the US population at high risk for wet-form AMD. Design, Setting, and Participants: In this economic analysis, an evaluation of the potential cost, cost-effectiveness, and government budgetary impact of adoption of a home-based daily visual-field monitoring system among eligible Medicare patients was performed. Effectiveness and visual outcomes data from the Age-Related Eye Disease Study 2 Home Monitoring of the Eye study, treatment data from the Wills Eye Hospital Treat & Extend study, and AMD progression data from the Age-Related Eye Disease Study 1 were used to simulate the long-term effects of telemonitoring patients with CNV in one eye or large drusen and/or pigment abnormalities in both eyes. Univariate and probabilistic sensitivity analysis and an alternative scenario using the Treat & Extend study control group outcomes were used to examine uncertainty in these data and assumptions. Interventions: Home telemonitoring of patients with AMD for early detection of CNV vs usual care. Main Outcomes and Measures: Incremental cost-effectiveness ratio, net present value of lifetime societal costs, and 10-year nominal government expenditures. Result: Telemonitoring of patients with existing unilateral CNV or multiple bilateral risk factors for CNV (large drusen and retinal pigment abnormalities) incurs \$907 (95% CI, -\$6302 to \$2809) in net lifetime societal costs, costs \$1312 (95% CI, \$222-\$2848) per patient during 10 years from the federal government's perspective, and results in an incremental cost-effectiveness ratio of \$35663 (95% CI, cost savings to \$235613) per quality-adjusted life-year gained. Conclusions and Relevance: Home telemonitoring of patients with AMD who are at risk for CNV was cost-effective compared with scheduled examinations alone. Monitoring patients with existing CNV in one eye is cost saving, but monitoring is generally not cost-effective among patients with low risk of CNV, including those with no or few risk factors. With Medicare coverage, monitoring incurs budgetary expenditures for the government but is cost-saving for patients at high risk of AMD. Monitoring could be cost saving to society if monitoring reduced the frequency of scheduled examinations or led to a reduction of one or more injections of ranibizumab.

Wong, J., et al. (2005). Turning the tide on demand for health care. Toronto The Change Foundation: 24.

Demand for health care in Canada is on the rise; understanding the factors that drive that demand is a crucial part of managing it. New drivers behind demand include an aging population, technological breakthroughs that have revolutionized medicine and a consumer unparalleled opportunities to learn about health. Socioeconomic disparities persist despite universal health care coverage in Canada making it another major factor affecting the demand of health care. There is growing acknowledgment that we cannot infinitely increase the supply of health care; we need to see the need behind expectations and find ways to manage demand instead. Demand management does not necessarily mean reducing demand, but rather it stresses the importance of understanding consumer behaviors, and helping consumers make more appropriate choices. Demand management focuses on 1) Providing vulnerable populations with disease prevention and ensuring they get better access to health care; 2) Pursuing long-term healthpromotion strategies for the overall population, ranging from pollution control to encouraging exercise programs; 3) Creating client-centred disease management programs to give the chronically ill improved continuity of care in a more cost-effective way; 4) Educating people so they're less likely to request unnecessary health care and moving control from

professionals to patients so they can exercise rights and responsibilities over their health. Shifting the focus of our search for solutions to demand management requires fundamental change. Currently, managers are preoccupied with affordability. A demand-side approach puts patients at the centre of health care, and new considerations - of appropriateness, shared decision making and information - take on greater importance and offer a road to ensuring a long-term sustainability of the system.

Wood, P. W., et al. (2017). "Home Blood Pressure Telemonitoring: Rationale for Use, Required Elements, and Barriers to Implementation in Canada." *Can J Cardiol* **33**(5): 619-625.

Contemporary hypertension guidelines strongly endorse the use of home blood pressure (BP) monitoring for hypertension diagnosis and management. However, barriers exist that prevent optimal use of home BP measurements. Patients might not follow the recommended home BP measurement protocol, might not take the required number of readings, and/or might report only selected readings to their providers. Providers might not calculate the mean (used for clinical decision-making) and/or incorporate home BP measurements into the medical record. Use of home BP telemonitoring, defined as the process by which home BP readings are securely teletransmitted and summarized within a health care portal or electronic medical record for provider use, might overcome these barriers. Telemonitoring, especially when combined with protocolized case management, leads to statistically significant and clinically important BP reductions, and improvements in overall BP control. Despite evidence supporting its use, home BP telemonitoring is not widely used in Canada. Barriers to adoption can be classified as structural and financial. Although technological advancements have made telemonitoring highly feasible, infrastructure is lacking, and implementation remains a challenge; this is especially true with respect to creating simple and cost-effective systems that are user-friendly and acceptable to patients as well as to providers. Ensuring data security is crucial to successful implementation, as is developing appropriate reimbursement models for providers. If these barriers can be overcome, home BP telemonitoring has the potential to make care provision easier and more convenient for patients and providers, while improving BP control in Canadians with hypertension.

Woods, L. W. et Snow, S. W. (2013). "The impact of telehealth monitoring on acute care hospitalization rates and emergency department visit rates for patients using home health skilled nursing care." *Home Healthc Nurse* **31**(1): 39-45.

This article describes the design and results of a study to demonstrate the impact of telemonitoring on acute care hospitalization (ACH) and emergency department (ED) visit rates for a Medicare-certified home health agency (HHA). Sociodemographic characteristics did not significantly differ between patients in the baseline, control, and intervention groups. Patients in the telemonitoring group had a statistically lower rate of ACH and ED visit rates. Telemonitoring may be an effective strategy for HHAs to reduce hospitalization and ED visits for patients with cardiac and/or respiratory conditions.

Wootton, R., et al. (2000). "Multicentre randomised control trial comparing real time teledermatology with conventional outpatient dermatological care : societal cost-benefit analysis." *British Medical Journal* **320**: 1252-1256, 1255 tabl.
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC27370/pdf/1252.pdf>

Wu, Y., et al. (2010). "TeleOph: a secure real-time teleophthalmology system." *IEEE Trans Inf Technol Biomed* **14**(5): 1259-1266.

Teleophthalmology (TeleOph) is an electronic counterpart of today's face-to-face, patient-to-specialist ophthalmology system. It enables one or more ophthalmologists to remotely examine a patient's condition via a confidential and authentic communication channel. Specifically, TeleOph allows a trained nonspecialist in a primary clinic to screen the patients with digital instruments (e.g., camera, ophthalmoscope). The acquired medical data are delivered to the hospital where an ophthalmologist will review the data collected and, if required, provide further consultation for the patient through a real-time secure channel established over a public Internet network. If necessary, the ophthalmologist is able to further sample the images/video of the patient's eyes remotely. In order to increase the productivity of the ophthalmologist in terms of number of patients reviewed, and to increase the

efficiency of network resource, we manage the network bandwidth based on a Poisson model to estimate patient arrival at the clinics, and the rate of ophthalmologist consultation service for better overall system efficiency. The main objective of TeleOph is therefore to provide the remote patients with a cost-effective access to specialist's eye checkups at primary healthcare clinics, and at the same time, minimize unnecessary face-to-face consultation at the hospital specialist's center.

Yang, Y. T. et Silverman, R. D. (2014). "Mobile health applications: the patchwork of legal and liability issues suggests strategies to improve oversight." *Health Aff (Millwood)* **33**(2): 222-227.

Mobile health (mHealth) technology has facilitated the transition of care beyond the traditional hospital setting to the homes of patients. Yet few studies have evaluated the legal implications of the expansion of mHealth applications, or "apps." Such apps are affected by a patchwork of policies related to medical licensure, privacy and security protection, and malpractice liability. For example, the privacy protections of the Health Insurance Portability and Accountability Act (HIPAA) of 1996 may apply to only some uses of the apps. Similarly, it is not clear what a doctor's malpractice liability would be if he or she injured a patient as the result of inaccurate information supplied by the patient's self-monitoring health app. This article examines the legal issues related to the oversight of health apps, discusses current federal regulations, and suggests strategies to improve the oversight of these apps.

Yocom, C. L. (2017). Health Care: Telehealth and Remote Patient Monitoring Use in Medicare and Selected Federal Programs. Washington GAO: 72.

<http://www.gao.gov/assets/690/684115.pdf>

Does Medicare pay when beneficiaries use two-way video visits to get care from their doctors? It depends. Medicare pays for some two-way video visits—referred to as "telehealth"—if the patients connect from rural health facilities. Generally, Medicare doesn't pay for telehealth in urban facilities or in the patient's home or office. The authors of this report talked to some health care associations, who believe that telehealth has the potential to maintain or improve quality of care and said that these rules create barriers to using telehealth. Medicare is testing new ways to provide health care that allow telehealth coverage regardless of location.

Yu, J., Mink, P. J., Huckfeldt, P. J., et al. (2018). "Population-Level Estimates Of Telemedicine Service Provision Using An All-Payer Claims Database." *Health Aff (Millwood)* **37**(12): 1931-1939.

In recent years state and federal policies have encouraged the use of telemedicine by formalizing payments for it. Telemedicine has the potential to expand access to timely care and reduce costs, relative to in-person care. Using information from the Minnesota All Payer Claims Database, we conducted a population-level analysis of telemedicine service provision in the period 2010-15, documenting variation in provision by coverage type, provider type, and rurality of patient residence. During this period the number of telemedicine visits increased from 11,113 to 86,238, and rates of use varied extensively by coverage type and rurality. In metropolitan areas telemedicine visits were primarily direct-to-consumer services provided by nurse practitioners or physician assistants and covered by commercial insurance. In nonmetropolitan areas telemedicine use was chiefly real-time provider-initiated services delivered by physicians to publicly insured populations. Recent federal and state legislation that expanded coverage and increased provider reimbursement for telemedicine services could lead to expanded use of telemedicine, including novel approaches in new patient populations.

Zanaboni, P., et al. (2016). "Long-term integrated telerehabilitation of COPD Patients: a multicentre randomised controlled trial (iTrain)." *BMC Pulm Med* **16**(1): 126.

BACKGROUND: Pulmonary rehabilitation (PR) is an effective intervention for the management of people with chronic obstructive pulmonary disease (COPD). However, available resources are often limited, and many patients bear with poor availability of programmes. Sustaining PR benefits and regular exercise over the long term is difficult without any exercise maintenance strategy. In contrast to traditional centre-based PR programmes, telerehabilitation may promote more effective integration of exercise routines into daily life over the longer term and broaden its applicability and

availability. A few studies showed promising results for telerehabilitation, but mostly with short-term interventions. The aim of this study is to compare long-term telerehabilitation with unsupervised exercise training at home and with standard care. **METHODS/DESIGN:** An international multicentre randomised controlled trial conducted across sites in three countries will recruit 120 patients with COPD. Participants will be randomly assigned to telerehabilitation, treadmill and control, and followed up for 2 years. The telerehabilitation intervention consists of individualised exercise training at home on a treadmill, telemonitoring by a physiotherapist via videoconferencing using a tablet computer, and self-management via a customised website. Patients in the treadmill arm are provided with a treadmill only to perform unsupervised exercise training at home. Patients in the control arm are offered standard care. The primary outcome is the combined number of hospitalisations and emergency department presentations. Secondary outcomes include changes in health status, quality of life, anxiety and depression, self-efficacy, subjective impression of change, physical performance, level of physical activity, and personal experiences in telerehabilitation. **DISCUSSION:** This trial will provide evidence on whether long-term telerehabilitation represents a cost-effective strategy for the follow-up of patients with COPD. The delivery of telerehabilitation services will also broaden the availability of PR and maintenance strategies, especially to those living in remote areas and with no access to centre-based exercise programmes. **TRIAL REGISTRATION:** ClinicalTrials.gov: NCT02258646 .

Zapata, B. C., et al. (2014). "Assessing the privacy policies in mobile personal health records." *Conf Proc IEEE Eng Med Biol Soc* **2014**: 4956-4959.

The huge increase in the number and use of smartphones and tablets has led health service providers to take an interest in mHealth. Popular mobile app markets like Apple App Store or Google Play contain thousands of health applications. Although mobile personal health records (mPHRs) have a number of benefits, important challenges appear in the form of adoption barriers. Security and privacy have been identified as part of these barriers and should be addressed. This paper analyzes and assesses a total of 24 free mPHRs for Android and iOS. Characteristics regarding privacy and security were extracted from the HIPAA. The results show important differences in both the mPHRs and the characteristics analyzed. A questionnaire containing six questions concerning privacy policies was defined. Our questionnaire may assist developers and stakeholders to evaluate the security and privacy of their mPHRs.

Zhang, D., Wang, G., Zhu, W., et al. (2018). "Expansion Of Telestroke Services Improves Quality Of Care Provided In Super Rural Areas." *Health Aff (Millwood)* **37**(12): 2005-2013.

Telestroke is a telemedicine intervention that facilitates communication between stroke centers and lower-resourced facilities to optimize acute stroke management. Using administrative claims data, we assessed trends in telestroke use among fee-for-service Medicare beneficiaries with acute ischemic stroke and the association between providing telestroke services and intravenous tissue plasminogen activator (IV tPA) and mechanical thrombectomy use, mortality, and medical expenditures, by urban versus rural county of residence in the period 2008-15. The proportion of ischemic stroke cases receiving telestroke increased from 0.4 to 3.8 per 1,000 cases, with usage highest among younger, male, non-Hispanic white, and patients in rural or super rural areas (super rural is the bottom quartile of rural areas). Compared with patients receiving usual care, those receiving telestroke had greater IV tPA and mechanical thrombectomy use regardless of county type, while those in super rural counties had lower thirty-day all-cause mortality. Despite increased telestroke use, rural patients remained less likely than urban patients to receive IV tPA. The findings suggest that telestroke service expansion efforts have increased, especially in rural and super rural counties, and have improved outcomes.

Les systèmes d'information de santé et hospitaliers

RAPPORTS INSTITUTIONNELS FRANÇAIS

ANAP (2018). Retours d'expérience des bonnes pratiques sur l'échange et le partage de données de santé. Paris Asip Santé: 19 , fig.

<https://esante.gouv.fr/actualites/acteurs-du-medico-social-comment-echanger-et-partager-des-donnees-de-sante>

L'ASIP Santé et la CNSA, avec l'appui des professionnels travaillant dans les MAIA, ont souhaité capitaliser sur des expériences locales de guides pratiques juridiques pour produire un document recensant les bonnes pratiques autour de l'échange et du partage des données de santé en rappelant le cadre juridique applicable.

Anap (2019). Le DMP en établissement de santé. Retours d'expérience. Paris ANAP: 24.

https://www.anap.fr/fileadmin/user_upload/outils_et_publications/Publications/Developper_une_approche_territoriale/Parcours_de_sante/DMP_etablissement_Sante_REX/DMP_en_etablissement_de_sante_REX.pdf

En mai 2019, plus de 6 millions de DMP sont ouverts. Le dossier médical partagé (DMP) favorise la continuité et la coordination des soins des patients. Après une expérimentation menée dans neuf départements, la généralisation du DMP à l'ensemble des assurés sociaux est entamée depuis novembre 2018. Retours sur les principaux enseignements dans cinq établissements.

Apssis (2019). Ouvrage collectif SSI Santé. Paris : Apssis: 125 , ill.

<http://www.apssis.com/#/publications-apssis/4395697>

La rédaction d'articles et de retours d'expériences a été proposée à un large panel de professionnels de la SSI Santé. L'objectif était de donner la parole au terrain, par la plume de celles et ceux qui « exercent la SSI », qui mettent en œuvre les principes de la cybersécurité au cœur des organisations, tant sur le volet « technique » que sur le volet « politique ». L'ouvrage est organisé en 7 thématiques : Normes et référentiels, Gouvernance de la SSI Santé, Technologies de sécurité, RGPD et cybersécurité, Processus et procédures, Conformité et audits, et Prospective.

CCNE (2019). Avis 130. Données massives et santé. Une nouvelle approche des enjeux éthiques. Paris CCNE: 90.

https://www.ccne-ethique.fr/sites/default/files/publications/avis_130.pdf

Poursuivant une réflexion antérieure sur les questions que posent le recueil de données personnelles et les nouvelles possibilités de leur utilisation dans le domaine des sciences de la vie et de la santé, et à la suite des États généraux de la bioéthique, le CCNE consacre son Avis 130 aux enjeux éthiques que soulève l'utilisation des « données massives » (Big Data). Dans le contexte de mutations technologiques et culturelles accélérées liées au traitement de ces « données massives », le CCNE souligne combien l'accumulation massive de données issues de personnes, comme la capacité accrue qu'a le traitement de ces données de produire de la valeur, nécessitent débat et réflexions éthiques. Cet avis : - énonce des principes éthiques communs à tous les contextes d'utilisation des données massives dans le champ de la santé (chapitre 2) ; - identifie des enjeux éthiques spécifiques aux situations de soin, de recherche, de gestion des soins, ou de vie personnelle qui utilisent les données massives (chapitre 3) ; - propose 12 recommandations indispensables au respect des principes éthiques fondamentaux permettant, sans les freiner, le développement des technologies fondées sur les données massives

CNIL (2018). Guide pratique sur la protection des données personnelles. Paris CNIL: 36.

<https://www.cnil.fr/sites/default/files/atoms/files/guide-cncom-cnil.pdf>

Le guide pratique, élaboré et rédigé conjointement par le CNOM et la CNIL, accompagne les médecins dans la mise en œuvre des obligations prévues par la nouvelle réglementation sur la protection des données personnelles. Il propose une approche pragmatique et des fiches thématiques, qui peuvent être consultées distinctement.

CNIL (2019). Commission nationale de l'informatique et des libertés. Rapport d'activité 2018. Paris CNIL: 99 , tabl., graph., fig.

https://www.cnil.fr/sites/default/files/atoms/files/cnil-39e_rapport_annuel_2018.pdf

L'entrée en application du RGPD a marqué une prise de conscience inédite des enjeux de protection des données auprès des professionnels et des particuliers. Cela s'est logiquement traduit par une augmentation considérable des plaintes adressées à la CNIL, avec une tendance à la hausse qui s'installe. La CNIL a aussi reçu un afflux de demandes d'information de la part des professionnels souhaitant s'approprier ce nouveau cadre, et ce, tous canaux confondus.

CNOM (2008). L'informatisation de la santé. Le livre blanc du Conseil national de l'Ordre des médecins. Paris CNOM: 16.

<http://www.web.ordre.medecin.fr/presse/cnomlivreblancinformatisation.pdf>

Les technologies de l'information participent aujourd'hui à l'amélioration de la qualité des soins. En jouant de manière positive sur la tenue des dossiers médicaux, en facilitant l'échange et le partage des données utiles à la décision médicale, en augmentant la disponibilité et la rapidité d'accès à ces informations, ces technologies contribueront de plus en plus aux progrès de la médecine. Elles ne doivent pas pour autant être mises en œuvre sans la réflexion éthique qu'imposent les risques qu'elles feraient peser sur les données individuelles de santé et, partant de là, sur la confiance accordée aux médecins, garants de leur confidentialité. Par son rôle de fédérateur des médecins, de toutes disciplines et de tous secteurs, réunis autour des mêmes principes déontologiques, le CNOM a la responsabilité de s'engager dans les projets de système d'information de santé au nom de l'avenir scientifique, mais dans le respect absolu des libertés individuelles. Il se mobilise aujourd'hui totalement et concrètement. Totalement : en soulignant que sa coopération passe nécessairement par une association étroite au dispositif rénové de gouvernance des systèmes d'information qui se mettra en place. Concrètement : en apportant sa vision des éléments fondateurs aptes à faire entrer les médecins dans un système communicant à la hauteur des enjeux de la société de l'information. C'est par cette double implication que l'ordre entend soutenir une relance du projet de dossier médical électronique sécurisé orientée dans une voie conforme à la relation médecin-patient et à la réalité des pratiques professionnelles. L'architecture proposée par l'ordre des médecins est fondée sur le respect des droits des patients : droit d'accès aux données partagées, droit de choisir les professionnels autorisés à partager ces données, droit à l'oubli. Elle est également conçue de façon à favoriser l'appropriation des technologies de l'information par les médecins. La réussite du dossier médical électronique exige qu'il soit réalisé pour les patients, par les médecins.

CNOM (2015). Livre blanc : De la e-santé à la santé connectée. Paris Conseil National de l'Ordre des médecins: 34.

<http://www.conseil-national.medecin.fr/node/1558>

Le CNOM observe avec intérêt que le débat sur la santé connectée s'est ouvert à la CNIL, dans des cercles de réflexion consacrés au numérique, dans les institutions du monde de la santé et au sein même de la Commission européenne. Ce livre blanc a vocation à enrichir le débat public. Il n'apporte pas des réponses péremptoires. Il pose des interrogations éthiques et déontologiques dans l'accompagnement des évolutions de nos sociétés et y apporte des éléments de réflexion. Il propose six recommandations, pour une "régulation adaptée, graduée et européenne" du traitement des données issues des objets ou "applis" de santé. et une évaluation scientifique "neutre" d'experts "sans lien d'intérêt avec les fournisseurs" spécifique à la télémédecine. (d'après résumé de l'éditeur).

CNOM (2018). Médecins et patients dans le monde des data, des algorithmes et de l'intelligence artificielle : analyses et recommandations du Cnom. Paris CNOM: 62, tab., graph., fig.

<https://www.conseil-national.medecin.fr/node/2563>

Trois ans après son livre blanc sur la santé connectée, le CNOM cherche avec cette étude très complète de 70 pages à "identifier dès maintenant les risques que la société numérique comporte afin de les combattre tout en soutenant tous les bénéfices qu'elle peut apporter au service de la personne". L'Ordre des Médecins identifie les problèmes éthiques d'usage des données, de respect de la vie privée, du consentement des patients, des questions autour de la finalité de la collecte et émet 33 recommandations. Un document permettant de se faire une idée de la révolution annoncée et de son impact sur la pratique des professionnels et leur formation.

Conseil National du Numérique (2015). La santé : bien commun de la société numérique. Construire le réseau du soin et du prendre soin. Paris Conseil National du numérique: 125.

Ce rapport est consacré au rôle du numérique dans la refondation de notre système de santé. Il formule 15 propositions pour que la transformation numérique de notre système de santé favorise l'émergence d'une société plus solidaire, équitable et innovante, en cohérence avec la Stratégie nationale du numérique. Elles inspireront notamment trois chantiers en cours: la construction du futur service public d'information en santé, l'émergence de nouveaux espaces de co-innovation en santé et les travaux sur le futur dossier médical dématérialisé.

CSIS (2015). GT 33 CSIS---CSF : Permettre l'émergence d'une stratégie industrielle en matière de e-santé, En soutien de la politique de santé publique, en associant les industriels. Lever les freins au déploiement de la télémédecine. Paris : Conseil Stratégique des Industries de Santé: (261), annexes.

Le Contrat de Filière Industries et Technologies de Santé, conclu en juillet 2013 entre l'Etat et les représentants de fédérations industrielles, comporte une mesure (dite « mesure 33 ») dédiée à faciliter le développement de la e-santé, reconnue comme filière d'avenir stratégique à fort potentiel de développement. Le groupe de travail mixte (« GT 33 »), chargé de la mise en œuvre de ces engagements a associé les représentants des pouvoirs publics (DGOS, DSSIS, DGE, DGRI, ASIP Santé, ANAP, HAS, CNAMTS, ANSM) et des syndicats industriels (SNITEM, Syntec Numérique) sous la co-présidence de Pierre LEURENT (Syntec Numérique et SNITEM) et de Philippe BURNEL (ministère des Affaires sociales, de la Santé et des Droits des femmes). Il rend public aujourd'hui son rapport d'activité et annonce un ensemble d'engagements visant à faciliter le déploiement de la télémédecine.

CSIS (2016). GT 28 CSF. Créer les conditions d'un développement vertueux des objets connectés et des applications mobiles en santé. Paris : Conseil Stratégique des Industries de Santé: (214), annexes.

<http://social-sante.gouv.fr/systeme-de-sante-et-medico-social/e-sante/article/objets-connectes-et-applications-mobiles-en-sante>

Le ministère des Affaires sociales et de la Santé (Délégation à la Stratégie des Systèmes d'Information de Santé), le ministère de l'Économie, de l'Industrie et du Numérique, et les Fédérations d'industriels regroupés au sein de l'alliance eHealth France (SNITEM, LESSIS, Syntec Numérique, LEEM, FEIMA) ont achevé leurs travaux dans le cadre du Comité Stratégique de Filière Santé et publient le rapport élaboré par le groupe de travail sur la thématique de la santé mobile (GT 28). Afin de « Créer les conditions d'un développement vertueux des objets connectés et des applications mobiles en santé », ils proposent la mise en œuvre d'un référentiel de labellisation avec un focus sur la fiabilité médicale, la protection des données et la cybersécurité.

CSIS (2016). Rapport du Conseil stratégique des industries de santé. Paris : Conseil stratégique des industries de santé 63.

Le Conseil stratégique des industries de santé, espace de concertation et d'échanges entre les industriels du secteur et les pouvoirs publics, est le lieu où se dessine une vision stratégique partagée. A la suite du séminaire du 17 avril 2015, ouvert par le Premier ministre, trois groupes de travail ont été mis en place : ils ont réuni les industriels et les pouvoirs publics, autour des principaux enjeux du secteur : la lisibilité et la prévisibilité, l'accès à l'innovation et l'attractivité de l'industrie française. Les orientations du 7e CSIS devront répondre aux défis auxquels sont confrontées les industries de santé.

Cugia, P., Polton, D. et Wainrib, G. (2018). Health data Hub : mission de préfiguration. Paris Ministère chargé de la santé: 110 , tab., graph., fig.

<https://solidarites-sante.gouv.fr/ministere/documentation-et-publications-officielles/rapports/sante/article/rapport-health-data-hub-mission-de-prefiguration>

Ce rapport rassemble les conclusions de la mission de préfiguration du « Health Data Hub », pilotée par trois experts, Dominique Polton, présidente de l'Institut national des données en santé (INDS), Marc Cuggia, professeur d'informatique médicale et praticien hospitalier au CHU de Rennes et Gilles Wainrib, président fondateur de la start-up Owkin. Il fait suite aux engagements du président de la

République qui avait annoncé au moment de la remise du rapport Villani, que la santé serait un des secteurs prioritaires pour le développement de l'intelligence artificielle, avec deux actions majeures, la création d'un « Health Data Hub » et l'élargissement du système national de données de santé. Le rapport propose une feuille de route pour la mise en œuvre opérationnelle de cette plateforme d'exploitation des données de santé, ainsi que des recommandations, notamment sur les aspects organisationnels et réglementaires. La ministre de la Santé a confirmé la mise en place de ce Hub des données de santé dans les tous premiers mois de 2019 et a confié au directeur de la Drees, Jean-Marc Aubert, cette mission. Concrètement, le « Health Data Hub », prendra la forme d'un guichet unique, sécurisé dans l'objectif de permettre le partage des données de santé dans le respect du droit des patients et en assurant la transparence avec la société civile. Il mutualisera des ressources technologiques et humaines et constituera un outil de promotion de l'innovation pour faire de la France un leader des données de santé.

Davadie, P. et al. (2016). *La donnée n'est pas donnée : stratégie & big data*, La Grange Buffly : Editions Kawa

La donnée est au coeur de la révolution cyber : tous les outils quotidiens la brassent sans relâche au point qu'elle suscite un nouvel intérêt et qu'elle est à la pointe du débat scientifique : propriété des données, usage des données, localisation des données des sujets au goût du jour. Certains estiment même qu'à la guerre de l'information va succéder la guerre des données. Or ces sujets ne peuvent être débattus sereinement que si, au préalable, on a pris la peine de définir ce que le terme recouvre. Cet ouvrage répond à cette question, s'interrogeant sur le sens de la donnée selon les disciplines (économie, informatique, philosophie), puis sur le rôle de la donnée dans l'espace numérique. Il s'attache ensuite à décrire les différentes stratégies de la donnée, que ce soit dans le secteur privé ou dans le secteur public. Il est constitué des actes d'un colloque organisé à l'École Militaire en mars 2015, augmentés de quelques participations originales.

Dini, E. F., et al. (2011). *Santé et logement : comment accompagner la Martinique et la Guyane ?* Paris Sénat : tabl.

<http://www.senat.fr/rap/r10-764/r10-7641.pdf>

Dans le cadre de ses travaux de contrôle et d'information, la commission a décidé l'envoi d'une délégation en Martinique et en Guyane pour étudier les questions spécifiques de la santé et du logement. En Martinique, la situation financière très dégradée des hôpitaux a conduit les acteurs locaux, au premier rang desquels l'agence régionale de santé, à décider la fusion des trois principaux établissements en un seul à compter du 1er janvier 2012. A l'approche de l'examen par le Sénat d'une proposition de loi relative à la lutte contre l'habitat indigne dans les départements d'outre-mer, qui a eu lieu début mai, la délégation s'est également attachée à comprendre les spécificités de l'urbanisation de Fort-de-France, marquée par l'édification anarchique et sans droit, à partir des années cinquante, de logements sur des terrains escarpés ou conquis sur la mangrove. En Guyane, la délégation a été frappée par le caractère singulier des problèmes qui se posent à un territoire qui est pourtant un département depuis 1946. Le niveau des services publics y est clairement insuffisant. La situation de l'offre de soins n'y est pas acceptable : déficit de professionnels de santé ; vétusté et exigüité des centres hospitaliers. Rare signe encourageant, la Guyane fait figure de pionnière en matière de télémédecine et l'hexagone pourrait judicieusement s'en inspirer. Par ailleurs, le territoire est parsemé de véritables bidonvilles qui ne font pas honneur à la République. Après le processus de départementalisation, qui a eu tendance à uniformiser les politiques publiques mises en œuvre en métropole et en outre-mer, le temps est venu de les adapter radicalement aux spécificités locales (résumé de l'éditeur)

Dionis du Séjour, J., et Etienne, J. C. (2004). *Les télécommunications à haut débit au service du système de santé* (2 tomes). Paris Assemblée Nationale: 2 vol. (138 +127).

<http://www.assemblee-nationale.fr/12/pdf/rap-off/i1686-t1.pdf>

<http://www.assemblee-nationale.fr/12/pdf/rap-off/i1686-t2.pdf>

Au moment où l'assurance maladie connaît l'une des crises les plus graves de son histoire et où tous les acteurs du système de soins vont devoir traverser des mutations très importantes, il est important d'évaluer l'apport potentiel des nouvelles technologies de l'information au système de santé français

et de cibler les obstacles à leur développement. Ce rapport sur l'internet à haut débit et les systèmes de santé se trouve au cœur de l'actualité. Le débat sur la maîtrise des dépenses du système de soins impose de revoir en profondeur l'architecture du système de santé français, qui intègre peu ou pas les nouvelles technologies de l'information.. La première partie porte sur l'outil internet en tant qu'outil de formation et d'information. La deuxième partie aborde la télémédecine sous ces divers aspects : télésurveillance, téléconsultation, téléchirurgie? Le rapport termine sur des recommandations.

Gregoire, O., et al. Livre blanc : 17 experts, 36 propositions pour une politique e-santé ambitieuse, Paris : Renaissance numérique

http://www.renaissancenumerique.org/system/attach_files/files/000/000/104/original/E-Sante-Renaissance_Nume%CC%81rique.pdf?1493195779

Ce rapport publié par Renaissance Numérique est consacré aux enjeux de la e-santé en 2017, et s'appuie notamment sur un sondage réalisé en partenariat avec Médiamétrie, et sur 17 experts qui formulent propositions concrètes et opérationnelles, afin de favoriser le développement de la e- santé en France. Cette étude comporte au total 36 mesures, couvrant les thèmes majeurs de la santé (financement, formation, patients et données). L'objectif est de promouvoir de nouvelles solutions auprès des décideurs publics dans une démarche de dialogue afin de faire bouger les lignes sur cet enjeu d'avenir pour la protection sociale.

Hamel, M. B. et Marguerit, D. (2013). "Analyse des big data. Quels usages, quels défis ?" Note D'analyse (La)(8): 11.

<http://www.strategie.gouv.fr/publications/analyse-big-data-usages-defis>

La multiplication croissante des données produites et le développement d'outils informatiques permettant de les analyser offre d'innombrables possibilités tant pour l'État que pour les entreprises. Il ne fait aucun doute que le traitement de ces masses de données, ou big data, jouera un rôle primordial dans la société de demain, car il trouve des applications dans des domaines aussi variés que les sciences, le marketing, les services client, le développement durable, les transports, la santé, ou encore l'éducation. Par ailleurs, le potentiel économique de ce secteur est indéniable et les retombées en termes d'emploi et de création de richesse seront non négligeables. Son développement nécessite toutefois de bien comprendre les enjeux qui y sont liés. C'est l'objectif de cette note, qui s'attache à détailler ce qu'est l'analyse des big data et présente les usages possibles de ces technologies, qu'il s'agisse de rendre la gestion plus efficace, d'améliorer les services rendus ou de prévenir des phénomènes nuisibles (épidémies, criminalité, etc.). Elle expose les principales difficultés associées à ces usages : garantir la confidentialité et le respect de la vie privée. Enfin, elle montre comment différents pays et entreprises ont d'ores et déjà investi dans ce secteur (résumé d'auteur).

HCAAM (2016). Avis sur les innovations et système de santé. Document 11 : Le numérique. Paris : Haut Conseil pour l'Avenir de l'Assurance Maladie: 35.

http://www.securite-sociale.fr/IMG/pdf/document_11_-_le_numerique.pdf

Le HCAAM considère que le numérique doit occuper une place majeure dans la réflexion portant sur l'innovation dans le champ de la santé. Il est vrai que les innovations en cours dans ce domaine en pleine évolution, objets connectés, applications mobiles pour ne citer que celles-ci, auront un impact qu'il est important d'étudier sur le système de santé. Mais plus largement, le numérique doit être considéré comme un levier majeur pour la transformation du système de santé, un élément déterminant des innovations organisationnelles aujourd'hui indispensables et du progrès dans le domaine des soins aussi bien que de la prévention.

Hubert, J. et Martineau, F. (2016). Mission Groupements Hospitaliers de Territoire - Rapport de fin de mission. Paris Ministère chargé de la Santé: 51.

http://social-sante.gouv.fr/IMG/pdf/rapport_final_mision_hmdefmodifsdefv150316.pdf

Instaurés par la loi Santé, les GHT ont vocation à développer une prise en charge « graduée » des patients en mutualisant les moyens des établissements au niveau d'un territoire. Le rapport intermédiaire présentait les 20 clés de réussite des GHT avec des premières orientations quant à leur

traduction en loi et en décret. Ce rapport final a pour objectif de présenter les orientations définitives pour les textes d'application.

Institut Montaigne (2013). Accès aux soins : en finir avec la fracture territoriale. Paris Institut Montaigne: 73 , tabl., fig.

<http://www.institutmontaigne.org/fr/publications/acces-aux-soins-en-finir-avec-la-fracture-territoriale>

Très onéreux, d'une grande complexité institutionnelle et administrative, le système de soins français pêche également par l'archaïsme de son organisation, caractérisé par de forts cloisonnements entre ville et hôpital comme entre professionnels de santé. Au-delà des problèmes évidents de répartition sur le territoire des professionnels de santé, la question est sans doute plutôt celle du modèle d'organisation des soins en France, qui ne correspond plus aux exigences sociales, démographiques et technologiques de notre pays. Face à ces défis et dans un contexte de finances publiques contraint, comment adapter notre système de santé ? C'est vers une organisation décloisonnée, régionalisée, construite autour des besoins des patients qu'il faut s'orienter. Le système de santé doit également s'adapter aux exigences des nouvelles générations de professionnels de santé et leur offrir les moyens d'exercer leur métier de façon regroupée, en bénéficiant de l'apport des nouvelles technologies.

Lopez, A. et Compagnon, C. (2015). Pertinence et efficacité des outils de politique publique visant à favoriser l'observance. Paris, Igas.

<http://www.igas.gouv.fr/IMG/pdf/2015->

[037R Pertinence et efficacite des outils de politique publique2 .pdf](http://www.igas.gouv.fr/IMG/pdf/2015-037R_Pertinence_et_efficacite_des_outils_de_politique_publique2_.pdf)

En novembre 2014, le Conseil d'Etat avait annulé "pour incompétence" les deux arrêtés décriés qui liaient la prise en charge de la Sécurité sociale à la bonne utilisation d'un dispositif médical dit à pression positive continue (PPC) pour le traitement des apnées du sommeil. Il s'agissait de placer tous les patients portant ce masque la nuit sous "télé-observance", avec l'emploi des objets connectés. Après cet épisode, la ministre de la Santé Marisol Touraine avait missionné l'IGAS sur l'observance des traitements par les patients, notamment lorsque ils sont atteints d'une maladie chronique. Dans son rapport de juillet 2015, rendu public seulement un an plus tard, la mission "déconseille fortement" de moduler les remboursements des soins en fonction de l'observance des traitements. Outre les difficultés qui seraient rencontrées, notamment pour mesurer l'observance, ce serait s'engager sur une pente dont le terme et les conséquences sont difficiles à apprécier. En revanche, l'IGAS préconise de développer l'éducation thérapeutique et l'accompagnement des patients, et de "développer une offre de télé-suivi-accompagnement" s'appuyant sur l'essor des appareils connectés, qui vont "profondément modifier l'exercice de la médecine". Le financement de ces services de télé-suivi-accompagnement dépendrait de leur performance, "faisant de la bonne observance et de la fidélisation des patients des marqueurs de la qualité de l'accompagnement".

Leguludec, P. p. et Julienne, K. p. (2018). Rapport d'analyse prospective 2018 : de nouveaux choix pour soigner mieux. Paris Haute Autorité de santé: 83.

www.has-sante.fr/portail/upload/docs/application/pdf/2018-07/rapport_analyse_prospective_2018.pdf

La Haute Autorité de Santé (HAS) s'est vue confier, par l'ordonnance du 26 janvier 2017, la mission annuelle de remettre au Parlement une analyse prospective comprenant des propositions d'amélioration de la qualité, de l'efficacité et de l'efficience du système de santé. Ce premier rapport prospectif 2018 rassemble 21 propositions pour agir et garantir sur le long terme un système de santé de qualité, efficient et équitable, tout en s'assurant que l'offre de santé répond aux priorités des usagers en France. Ce document préconise notamment "une gestion plus dynamique du panier de biens et services de santé pris en charge", qui devra "être portée par une forte volonté politique".

LIR (2018). Données de santé : nouvelles perspectives pour les acteurs et les systèmes de soins. Paris LIR: 11 , fig.

http://www.openhealth.fr/images/files/etude_lir_ey_donnees_de_sante_nouvelles_perspectives.pdf

Cette étude a pour objectif d'identifier les leviers et les points d'ancrage pour une utilisation optimisée des données de santé en France. Elle est le fruit d'une réflexion prospective qui a permis de poser les

perspectives de l'utilisation des données de santé pour les acteurs et les systèmes de soins. Des exemples d'initiatives mises en place dans les pays nordiques et anglo-saxons y sont présentés, démontrant l'intérêt de l'exploitation et du chaînage des données comme accélérateurs de la transformation des systèmes de soins.

Ministère chargé de la Santé (2018). SSSI Sécu : Schéma Stratégique des Systèmes d'Information de la Sécurité sociale. Paris Ministère chargé de la santé: 82 , tab., graph., fig.

<http://securite-sociale.fr/Le-nouveau-schema-strategique-des-systemes-d-information-de-la-Securite-Sociale-2018-est-en>

Ce nouveau schéma stratégique des systèmes d'information de la Sécurité Sociale, mis en ligne le 23 octobre 2018 sur le portail de la Sécurité sociale, fixe pour les années à venir des grandes orientations transverses de transformation numérique des organismes de sécurité sociale et de modernisation de leurs systèmes d'information. Le SSSI 2018-2022 vient renouveler la vision numérique de la Sécurité sociale au travers de quatre grands axes fondateurs (Automatisation des processus métiers, Relation 360° à l'utilisateur, Modernisation des outils des agents, Transformation des organisations) et des orientations stratégiques qui doivent répondre aux nouveaux enjeux du service public. Il s'appuie néanmoins sur les efforts déjà fournis et sur ce qu'ont bâti les OSS durant la période précédente (RNCPS, SNGI, DGE, SI Maladie, DSN, ...) pour accélérer la dynamique de transformation en adéquation avec la stratégie numérique de l'Etat. Le SSSI sera réactualisé chaque année de manière à poursuivre la programmation des différents chantiers identifiés

Ministère chargé de la Santé (2016). Stratégie nationale pour le développement de l'e-santé : Le numérique au service de la modernisation et de l'efficacité du système de santé, Paris : Ministère chargé de la santé

http://social-sante.gouv.fr/IMG/pdf/strategie_e-sante_2020.pdf

Le Ministère des Affaires sociales et de la Santé vient de publier la Stratégie nationale e-santé 2020. L'objectif de cette stratégie est d'intégrer, de manière innovante, les nouvelles technologies pour améliorer le fonctionnement de notre système de santé. Il s'articule autour de quatre axes. Le premier axe vise à mettre le citoyen au cœur du système de santé, notamment en simplifiant l'accès aux soins et en développant des services favorisant l'autonomie des patients. Le deuxième axe consiste à soutenir l'innovation des professionnels de santé. Il s'agit de développer des cursus de formation autour du numérique, de soutenir les projets en faveur de l'innovation numérique, mais aussi de développer des outils d'aide à la décision médicale. Les mesures du troisième axe entendent simplifier le cadre d'actions pour les acteurs économiques, en clarifiant, notamment, les voies d'accès au marché des solutions e-santé. Enfin, le quatrième et dernier axe concerne la modernisation des outils de notre système de santé, avec l'amélioration des systèmes d'information, de la veille et de la surveillance sanitaire.

Picard, R. et Salgues, B. (2007). TIC et santé: quelle politique publique? Paris CGTI: 19 +annexes.

<http://www.cgti.org/rapports/rapports-2007/rapport-tic-sante.pdf>

Ce rapport analyse la situation de l'emploi des technologies de l'information et des communications (TIC) dans le domaine de la santé. Il est composé de trois parties. Il propose tout d'abord une synthèse des réponses des industriels sur leur vision de la situation française autour des thèmes suivants : forces, faiblesses, opportunités, menaces pour la France; économies possibles par les TIC ; politique industrielle souhaitable. Dans une seconde partie, les éléments précédents sont repris et discutés selon les thèmes récurrents : l'attitude du patient et du médecin, les politiques de santé, de recherche et d'industrie, l'évolution technologique, le cadre réglementaire. Enfin, quelques propositions sont formulées concernant la suite souhaitée par les industriels de ce travail de concertation.

Picard, R. et Vial, A. c. (2013). Prospective organisationnelle pour un usage performant des technologies nouvelles en Santé. Paris C.G.E.I.E.T.: 27.

<https://www.economie.gouv.fr/cge/prospective-organisationnelle-pour-usage-performant-des-technologies-nouvelles-en-sante>

Ce rapport apporte un éclairage prospectif sur les conditions organisationnelles pour un usage performant des technologies nouvelles en Santé, avec un regard particulier sur la télémédecine et plus largement sur la télésanté.

Pipame (2016). E-santé : faire émerger l'offre française en répondant aux besoins présents et futurs des acteurs de santé. Paris : Pôle Interministériel de Prospective et d'Anticipation des Mutations Economiques: 116 , fig., tabl.

Soigner autrement est un impératif de santé publique dans un contexte de vieillissement de la population, d'augmentation des maladies chroniques, d'hyperspécialisation de la médecine, de désertification médicale et d'exigence accrue des patients. C'est également un impératif économique qui touche particulièrement la France dont les dépenses de santé croissent aujourd'hui plus fortement que le PIB. Le système de santé français qui s'est bâti autour de l'hôpital fait face, comme beaucoup d'autres secteurs économiques, à une transformation de son activité impulsée par le numérique. Au-delà de l'informatisation des établissements de santé ou des dossiers patients, les technologies numériques permettent aujourd'hui le développement de nouveaux services dans l'ensemble des domaines de la chaîne de valeur : bien-être, information, prévention, soins ou accompagnement du patient. L'étude dresse un état des lieux des différents segments du marché de l'e-santé, existants ou en développement, qui constitueront demain la croissance industrielle de cette activité encore émergente que ce soit en France, en Europe ou dans le monde. Elle évalue les différents points forts et points faibles de l'offre industrielle française et se penche sur les bonnes pratiques de plus d'une vingtaine de pays. L'étude identifie l'ensemble des leviers structurants permettant de développer une filière industrielle de l'e-santé en France. Elle montre ainsi que la France dispose de tous les atouts pour réussir. Pour autant, de nombreux obstacles demeurent dans les domaines réglementaire et institutionnel, mais également dans l'appropriation des usages par les patients et les professionnels de santé. Comme souvent avec ces technologies, l'usage par le plus grand nombre constitue la clé de la transformation (résumé de l'éditeur).

Informatique médicale

ANAP (2014). Audit des Systèmes d'Information Hospitaliers auprès d'établissements représentatifs : Rapport final. Paris ANAP: 41 , tabl., fig.

L'audit des SIH de treize établissements, mené par l'ANAP au premier trimestre 2014, complété par une étude des bases de données disponibles, a permis de constater : (1) que le marché français de l'informatique hospitalière, troisième par la taille en Europe, est excessivement fragmenté tant du côté de l'offre que du côté de la demande et, par conséquent, est structurellement fragile ; (2) que l'informatisation de la production des soins est très largement engagée dans les hôpitaux français et que l'usage de l'informatique est généralisé à l'hôpital, dans tous les secteurs ; (3) que les spécialités médicales et l'ouverture des SIH sur leur territoire sont des thèmes émergents. Les déterminants du succès du déploiement des SIH sont très largement externes, en particulier par les politiques publiques. En interne, les SIH doivent s'appuyer sur la stratégie, les hommes et les organisations, les méthodes et les outils et leur interopérabilité. Le rapport propose trois axes de travail pour accélérer le déploiement et l'usage des SIH : (1) les actions visant à renforcer les capacités des établissements en maîtrise d'ouvrage des SI et à les préparer à intégrer leur système dans le parcours coordonné du patient ; (2) les actions de structuration de l'offre de SIH ; (3) les actions visant à renforcer l'action publique et à accroître la lisibilité des actions.

ANAP (2016). Système d'information territorial pour le parcours et la coordination - Tome 1 : Schéma général. Paris ANAP: 29 , fig.

<http://www.anap.fr/publications-et-outils/publications/detail/actualites/systeme-dinformation-territorial-pour-le-parcours-et-la-coordination-tome-1-schema-general/>

Ce document présente le schéma général d'un système d'information territorial au service du parcours patient et de la coordination des prises en charge. Cette modélisation découle principalement de l'observation et de l'analyse du programme Territoires de soins numériques (TSN)

et intègre les travaux menés dans le programme Personnes âgées en risque de perte d'autonomie (PAERPA) pour la construction d'outils numériques. Le système d'information dont on représente ici le schéma fonctionnel a une dimension territoriale et régionale. Il concerne une grande variété de situations et de cas d'usage, les activités de coordination étant comprises dans une acception très large et intéressant potentiellement toutes les catégories d'utilisateurs et de professionnels, pouvant aller jusqu'à l'approche polyvalente multi-populations, multi-pathologies. Cette étude présente les principales composantes du système d'information en les articulant autour : De cinq fonctions socles destinées à garantir la cohérence du système d'information et son intégration dans l'espace numérique régional de santé : fonctions de sécurité, d'annuaires, d'interopérabilité, de partage et d'échange d'information ; De fonctions et services numériques destinés aux activités de coordination des professionnels ainsi que de la gestion des informations sanitaires, médico-sociales et sociales utiles ; De services de portails d'accès pour les usagers (professionnels, patients, aidants), ainsi que les services pour l'évaluation et pour l'efficacité des dispositifs de coordination.

Asip Santé (2009). Programme de relance du DMP et des systèmes d'information partagés de santé - Orientations stratégiques et principes de mise en œuvre. Paris ASIP SANTE: 112.

Le présent document présente les orientations stratégiques relatives au développement des systèmes d'information partagés de santé et les principes de mise en œuvre du DMP. Il contient nécessairement des développements consacrés aux modalités de conduite de projet, dont le caractère parfois technique ne doit pas conduire à penser que les finalités médicales et d'usage du projet seraient négligées au profit de sa dimension technologique. Le service aux utilisateurs, qu'ils soient professionnels de santé ou patients, demeure la préoccupation première et constante de ce programme de relance et sous-tend chacune de ses composantes. De par la diversité et la complexité des sujets abordés, ce programme de relance ne saurait prétendre apporter sur chacun d'eux une réponse définitive. Sur la base des axes stratégiques qui fondent ce programme, un travail de concertation sera conduit avec l'ensemble des acteurs afin d'en préciser les modalités de réalisation et d'en engager la mise en œuvre sur une base consensuelle (résumé d'auteur).

Asip Santé, A. (2011). Guide pratique du projet DMP en établissement de santé et plan projet associé. Paris ASIP Santé: 81 , ill.

Le Dossier Médical Personnel (DMP) doit aider à améliorer la coordination des soins grâce à une meilleure circulation de l'information médicale entre les professionnels de santé de l'hôpital et de la ville. Il existe plusieurs façons de mettre en œuvre ce projet dans les établissements de santé. Ce guide est destiné à accompagner les chefs de projet DMP dans les établissements et les maîtrises d'ouvrage régionales. C'est un document pratique dont les préconisations opérationnelles reposent sur les retours d'expériences des établissements et maîtrises d'ouvrage régionales dans les régions pilotes, ainsi que sur un travail concerté avec les responsables de systèmes d'information en établissements et plus globalement avec la Direction générale de l'offre de soins (DGOS), l'Agence Nationale d'appui à la performance (ANAP), les Fédérations Hospitalières et quelques éditeurs et personnes qualifiées. Chaque type d'établissement, quels que soient son statut, sa taille, son niveau de connaissance du DMP et sa situation d'informatisation, y trouvera des éléments permettant de définir sa trajectoire de mise en œuvre du DMP.

Babusiaux, C., et al. (2003). L'accès des assureurs complémentaires aux données de santé des feuilles de soins électroniques. Paris Ministère chargé de la Santé: 90 , ann.

Les assureurs complémentaires souhaitent, depuis plusieurs années, accéder aux données de santé contenues dans les feuilles de soins électroniques, que seuls reçoivent aujourd'hui les assureurs complémentaires. Une telle demande soulève des problèmes juridiques et techniques, ainsi que des questions d'organisation et de coût. Elle touche à des sujets essentiels comme le respect des libertés individuelles et la préservation du secret médical. Ce rapport a donc pour objectif d'étudier la faisabilité du projet et d'en préciser les modalités. Il analyse, tout d'abord, la demande des assureurs complémentaires pour en préciser les différentes composantes. Il étudie ensuite les diverses règles applicables et leur articulation, de manière à dégager la nature et les limites des solutions juridiques possibles pour que la télétransmission des données nominatives puisse être effectuée par le professionnel de santé. Les limites et difficultés de ces voies amènent à examiner si d'autres solutions

qu'une télétransmission nominative par les professionnels de santé sont possibles. Sont alors précisées les contraintes techniques et les modalités d'organisation qui s'imposeraient dans tous les cas. Cet examen amène aux recommandations sur le choix entre les solutions pour la transmission des données individuelles et sur les modalités de mise en œuvre. Enfin, est suggérée la possibilité pour les assureurs complémentaires d'accéder aux données statistiques du système national d'information interrégimes de l'assurance maladie. L'ensemble a été mené indépendamment de toute évolution éventuelle de la ligne de partage entre assurance obligatoire et assurance complémentaire, en précisant seulement comment la pondération de certains éléments du raisonnement se trouverait modifiée si cette répartition évoluait. Ce rapport fait suite au rapport de M. Fieschi de janvier 2003.

Babusiaux, C. p. (2015). Rapport au Parlement 2015. Ouverture, qualité, partage : des avancées. Charenton-Le-Pont Institut des données de santé: 72.

Ce rapport, que l'Institut des données de santé remet comme chaque année au Parlement après adoption par son Assemblée Générale conformément à la loi du 13 août 2004, traduit des progrès importants dans trois domaines d'actions : L'ouverture des données pour la recherche s'est accélérée. L'IDS en a approuvé 161 depuis 2009, dont 83 depuis début 2014. L'utilisation des données par près de 200 chercheurs devrait permettre à la recherche de progresser dans des domaines majeurs de l'épidémiologie (cancer, diabète, asthme, etc.), des effets des médicaments et des interactions médicamenteuses, et de l'évaluation médico-économique (dispositifs médicaux, inégalités territoriales etc.). Le service d'aide à la décision est passé à 39 tableaux de bord couvrant les champs ambulatoires et hospitaliers et permettant le suivi d'indicateurs essentiels. Ce service, aujourd'hui à la disposition des membres de l'IDS et d'autres organismes œuvrant dans le domaine de la santé, favorise la connaissance et le partage d'informations essentielles entre les grands acteurs de la santé et de la protection sociale. La qualité et la cohérence des bases de données publiques ont été à nouveau améliorées. L'IDS a réalisé 20 rapports depuis 2011 et a proposé 154 améliorations afin que ces bases répondent mieux aux besoins des acteurs et de la recherche. Dans le même temps, l'IDS s'est assuré du respect de l'anonymat des personnes, du secret médical, ainsi que de l'éthique et de la déontologie auxquels veille le Comité d'Experts présidé par Didier Sicard, dont l'audition annuelle devant l'Assemblée Générale est retracée dans le présent rapport.(d'après l'éditorial).

Bégaud, B., et al. (2017). Les données de vie réelle, un enjeu majeur pour la qualité des soins et la régulation du système de santé : L'exemple du médicament. Paris La documentation française: 105, tab., graph., fig.

<http://www.ladocumentationfrancaise.fr/rapports-publics/174000870-les-donnees-de-vie-reelle-un-enjeu-majeur-pour-la-qualite-des-soins-et-la-regulation?xtor=EPR-526>

Ce rapport sur le suivi en vie réelle des médicaments est basé sur des données issues de la prescription, de la délivrance et de la consommation des médicaments par les patients. Il est le fruit de réflexions menées avec un groupe de travail associant toutes les parties prenantes : autorités de santé, assurance maladie obligatoire et complémentaire, usagers, professionnels de santé, industriels, chercheurs. Le rapport souligne qu'avec la révolution numérique et les possibilités croissantes de collecte et d'analyse d'informations qu'elle permet, la production et l'utilisation de données observationnelles deviennent un objectif stratégique pour tous les systèmes de santé et renouvellent l'approche traditionnelle des études sur les médicaments, historiquement centrées sur les essais cliniques. Agnès Buzyn a décidé de constituer un groupe de travail entre les services du ministère, la Cnamts et la HAS pour travailler sur les modalités d'évaluation des médicaments. Celui-ci devra préparer la mise en œuvre des propositions formulées par Bernard Bégaud, Dominique Polton et Franck von Lennep. Il devra également travailler à d'autres pistes de réforme en ce domaine, en rouvrant notamment le chantier lancé par le rapport sur l'évaluation du médicament remis par Dominique Polton en novembre 2015.

Blanchard, P., et al. (2014). Evaluation de la coordination d'appui aux soins. Rapport Igas ; 2014-010R. Paris IGAS: 123.

http://www.igas.gouv.fr/IMG/pdf/2014-010R_Evaluation_coordination_appui_soins.pdf

A la demande de la ministre en charge de la santé, l'IGAS a été chargée de « procéder à un inventaire et à une analyse de l'ensemble des coordinations d'appui aujourd'hui déployées ». Cette mission a été

envisagée dans le cadre de la Stratégie nationale de santé (SNS). Après un diagnostic de la situation, le rapport propose une nouvelle organisation de la coordination d'appui aux soins, reposant sur l'initiative des médecins. La coordination d'appui aux soins proposée est ainsi destinée à éviter toute rupture dans la prise en charge globale des patients grâce à la mobilisation de l'ensemble des professionnels qui peuvent y concourir. Concrètement, la mission propose que ce soit le médecin de premier recours, et lui seul, qui puisse la déclencher en concertation avec le patient. Le médecin de premier recours pourrait ainsi choisir de recourir à différentes modalités en fonction de sa pratique et de ses habitudes.

Blanchet, P., et al. (2014). Identifier les enjeux de l'articulation entre dossier patient commun et dossiers de spécialités. Paris ANAP: 52.

La constitution d'une informatique médicale et administrative a donné lieu à des cohabitations de logiciels complexes avec d'une part un dossier patient commun et des outils ou dossiers de spécialité, sur mesure. Leur articulation est un véritable enjeu pour l'établissement de santé avec des améliorations attendues en termes de qualité de la prise de charge des patients, de conditions de travail des professionnels de santé et de valorisation de l'activité. Ce rapport explique l'origine des articulations insatisfaisantes souvent observées aujourd'hui ainsi que les risques et inconvénients induits. Il présente différentes préconisations, issues de l'expérience des membres du groupe de travail ainsi que des témoignages des 5 établissements de santé visités, privés et publics.

Boaretto, Y., et al. (2007). Rapport sur le dossier médical personnel (DMP). Paris IGAS: 85 , ann.

Institué par la loi n°2004-810 du 13 août 2004, le dossier médical personnel (DMP) avait pour but de favoriser la coordination, la qualité et la continuité des soins. Compte tenu de la complexité du dispositif, un GIP, composé de l'Etat, de la Caisse des dépôts et consignations et de l'assurance-maladie, avait été constitué en avril 2005 pour piloter la mise en place du DMP. Celui-ci devait être généralisé à tous les bénéficiaires de l'assurance maladie pour le 1er juillet 2007. La mission conjointe IGAS-IGF-CGTI, mise en place en juillet 2007, fait le point sur l'état d'avancement et le pilotage de ce projet ainsi que sur sa capacité à répondre aux objectifs initiaux. Elle estime notamment que le dispositif s'est vu, d'emblée, doté d'objectifs irréalistes, aussi bien dans le calendrier imposé, le coût du projet que dans le modèle économique choisi, modèle dont le potentiel d'économies attendu pour l'assurance maladie ne s'est pas vérifié. Elle observe par ailleurs que le projet DMP souffre d'une perte de crédibilité et de lisibilité et présente d'importantes zones de risques et d'incertitudes. Sur la base de ce constat, la mission présente une série de recommandations pour « sauvegarder les acquis, restaurer la confiance et relancer le projet de DMP ».

Bouchoux, C. (2014). L'accès aux documents administratifs et aux données publiques. 2 tomes. Paris Sénat: 2 vol. (215; 359), tabl., fig.

<http://www.senat.fr/rap/r13-589-1/r13-589-11.pdf>

<http://www.senat.fr/rap/r13-589-2/r13-589-21.pdf>

En 1978, le Parlement reconnaissait à toute personne le droit d'obtenir communication des documents de l'administration (loi CADA). Il ouvrait ainsi aux citoyens, en rupture avec la confidentialité caractéristique de la culture administrative française, la possibilité d'analyser et de comprendre les décisions publiques et de les contester. À l'heure du numérique, l'accès aux informations produites et recueillies par l'administration ainsi que la possibilité de les réutiliser prennent une dimension entièrement nouvelle, dont les enjeux sont à la fois stratégiques, démocratiques et économiques : la possibilité de réutiliser les données publiques ouvre en effet des perspectives encore largement inexploitées en matière de contrôle de l'action publique, d'amélioration de son efficacité et de sa qualité ou de développement de nouveaux services. La mission commune d'information a donc souhaité, d'une part, s'assurer de l'effectivité du droit formulé il y a 35 ans et, d'autre part, évaluer la pertinence et l'efficacité des politiques engagées depuis quelques années par les pouvoirs publics en matière de diffusion de l'information publique et, plus récemment, d'ouverture des données publiques (open data) (tiré de la synthèse).

Bras, P. L., et al. (2011). Pharmacies d'officines : rémunération, missions, réseau. Rapport Igas ; RM2011-090P. Paris Igas: 208 , tabl., annexes.

<http://www.ladocumentationfrancaise.fr/rapports-publics/114000355/index.shtml>

Comment se porte le secteur de la pharmacie d'officine en France et quel est son avenir ? L'Inspection générale des affaires sociales (IGAS) livre son diagnostic notamment à partir de l'enquête nationale qu'elle a menée sur les pratiques officinales, première du genre en France et propose des pistes pour diversifier le rôle des pharmaciens, les rémunérer comme des professionnels de santé et optimiser le réseau des officines sur le territoire.

Bras, P. L. et Loth, A. (2013). Rapport sur la gouvernance et l'utilisation des données de santé. Paris Ministère chargé de la Santé: 128 , tabl., ann.

http://www.social-sante.gouv.fr/IMG/pdf/Rapport_donnees_de_sante_2013.pdf

Par lettre du 16 avril 2013, la ministre des Affaires sociales et de la santé a saisi l'auteur de ce rapport, Pierre-Louis Bras d'une mission sur la gouvernance et l'utilisation des données de santé. Le sujet est complexe. Il concerne surtout la plus importante des bases de données publiques de santé dans notre pays, voire dans le monde, le Système national d'information inter-régime de l'assurance maladie (SNIIRAM). Issues des feuilles de soins et des résumés de sortie hospitaliers, dont on a retiré tous les éléments directement identifiants, les données du SNIIRAM décrivent l'offre et la consommation de soins ainsi que l'état de santé des quelques 65 millions d'habitants de notre pays dans la période récente. Le présent rapport propose les voies et les moyens pour mettre en place un dispositif d'accès et d'utilisation des bases de données médico-administratives, adapté aux besoins de santé publique et de sécurité sanitaire, dans des conditions fiables et sécurisées, respectant notamment le strict anonymat des patients. Le rapport s'inscrit dans le cadre plus général de la réflexion menée sur l'ouverture de l'accès aux données de santé. Il complète ainsi le rapport sur la pharmaco-surveillance remis le 15 septembre 2013 à la ministre par les Professeurs Bégaud et Costagliola - qui recommandait la création d'une structure regroupant et analysant l'ensemble des données de santé sur l'utilisation des médicaments et produits de santé. Il s'articule par ailleurs avec la mission « Open data » sur la politique d'ouverture des données publiques.

CCNE (2008). Avis n°104. Le dossier médical personnel et l'informatisation des données de santé. Paris : Comité Consultatif Nationale d'Ethique pour les Sciences de la Vie et de la Santé: 16.

Le Comité Consultatif National d'éthique (CCNE) a été saisi le 19 mars 2008 par Madame le Ministre de la santé Roselyne Bachelot à propos du développement des technologies de l'information dans le champ médical. La saisine évoque les risques induits par l'accès électronique des dossiers du patient par les personnels de santé au regard du respect de son droit à la confidentialité des données. Elle interroge le Comité sur les mesures concrètes susceptibles de concilier la nécessité d'un accès des acteurs de soin aux informations qui s'y trouvent consignées avec le droit du patient à garder le contrôle de leur diffusion.

Cecchi-Tenerini, R., et al. (2002). Evaluation du système d'information des professionnels de santé. Paris IGAS, Paris La documentation française: 68 , ann.

<http://www.ladocumentationfrancaise.fr/rapports-publics/044000449/index.shtml>

Les systèmes d'information se sont fortement développés au cours des vingt dernières années dans le monde de la santé. Le rapport dresse dans un premier temps un bilan du système en place, de ses lacunes par rapport aux objectifs fixés, des obstacles qu'il a rencontrés. Puis dans un deuxième temps il émet des propositions visant à permettre de mieux définir le rôle de l'Etat et l'organisation du ministère de la santé, à développer les instruments au service de la politique de santé et à poursuivre le développement des principaux outils actuels du système d'information. NOTE : Les fichiers compatibles avec le matériel de synthèse vocale utilisé par le public malvoyant pourront être adressés sur simple demande à la section des rapports de l'IGAS à l'adresse internet suivante : igas-section-rapports@sante.gouv.fr

Chevreur, K., et al. (2006). Faisabilité d'un système d'information public sur la médecine de ville. Rapport Irdes : 1648. Paris IRDES: 205 , tabl.

Cette étude s'inscrit dans le cadre d'une réflexion sur le développement d'un système d'information public permanent sur la médecine libérale en France. En effet, il n'existe actuellement aucun système public permettant de connaître les motifs de recours de la population aux médecins libéraux et de les lier avec les prescriptions. En l'absence de cette information, un volet entier des pratiques professionnelles échappe à l'évaluation, alors même que les différents acteurs du système de santé s'accordent pour dire toute l'importance qu'il y aurait à le faire. Dans cette étude, nous faisons le point sur les différents recueils informatisés existant en France début 2005, qu'ils proviennent de sources administratives, de sociétés privées ou de sociétés savantes. Nous recensons et décrivons également les différents systèmes mis en place à l'étranger et accessibles aux pouvoirs publics. Enfin, en fonction des niveaux d'informations souhaités, nous développons différentes propositions allant de la création d'un nouvel observatoire des pratiques médicales à l'utilisation de bases de données existantes.

CISS (2011). Dossier médical personnel : le DMP en questions, Paris : CISS
<https://www.inc-conso.fr/content/dossier-medical-personnel-le-dmp-en-questions>

À travers ce dépliant, le Collectif Interassociatif Sur la Santé (CISS) accompagne la mise en place du dossier médical personnel (Dmp), qui vise à améliorer et faciliter la coordination des soins entre les professionnels de santé amenés à intervenir auprès d'une même personne. Dans ce dépliant, sont expliqués ce qu'est ce nouvel outil pour l'usager, comment y accéder, ? comment ça marche ? (Résumé de l'éditeur).

Cnamts (2003). Noémie O.C./Inter-régimes : norme ouverte d'échanges entre la maladie et les intervenants extérieurs : cahier des charges. Paris : Cnamts ; Paris : CCMSA: 210 , tabl.

Le cahier des charges Norme Ouverte d'Echange entre la Maladie et les Intervenants Extérieurs : Organismes Complémentaires (NOEMIE O.C.) définit la norme d'échanges informatiques avec les organismes complémentaires ainsi que les conditions pratiques de sa mise en place. Cette version intègre la gestion de la Classification commune des actes médicaux (CCAM).

Cnamts (2015). Le dossier médical partagé au service de la coordination des soins. Point d'étape, Paris : Cnamts

En prévision de l'application de l'article 25 de la loi Santé qui confie à l'Assurance Maladie la responsabilité de gestion du Dossier Médical Partagé (DMP), la Cnamts a exploré les modalités de mise en œuvre de cet outil de coordination des soins, attendu par tous, patients comme professionnels de santé.

CNN (2015). La santé : bien commun de la société numérique. Construire le réseau du soin et du prendre soin. Paris Conseil National du numérique: 125.

Ce rapport est consacré au rôle du numérique dans la refondation de notre système de santé. Il formule 15 propositions pour que la transformation numérique de notre système de santé favorise l'émergence d'une société plus solidaire, équitable et innovante, en cohérence avec la Stratégie nationale du numérique. Elles inspireront notamment trois chantiers en cours: la construction du futur service public d'information en santé, l'émergence de nouveaux espaces de co-innovation en santé et les travaux sur le futur dossier médical dématérialisé.

CNOM (2012). Comment déployer la prescription électronique ? Note d'orientation. Paris CNOM: 7.
<http://www.ordre.pharmacien.fr/content/download/10476/151593/version/2/file/Prescription-electronique-clio-note-orientation.pdf>

La prescription électronique devient incontournable car elle comporte un fort impact positif pour faciliter la sécurité des exercices professionnels et leur qualité tant au titre de chaque professionnel de santé qu'au titre des bénéficiaires en santé publique, pour améliorer la sécurité et la qualité des prescriptions. Les ordres des professions de santé réunis au sein du CLIO Santé considèrent que le

temps est venu d'agir et dressent dans cette note une liste des grandes options qu'il convient de proposer au plus vite à tous les acteurs concernés (d'après le résumé d'auteur).

CNOP (2014). Le Dossier Pharmaceutique – Rapport d'activité 2013 de l'Ordre national des pharmaciens. Paris Ordre National des pharmaciens: 36 , graph.

<http://www.ordre.pharmacien.fr/Communications/Rapports-d-activite/Le-Dossier-Pharmaceutique-Rapport-d-activite-2013>

Utilisé par 22 300 officines (98,7 %) et 32,8 millions de Français, le dossier pharmaceutique (DP) aurait permis la modification de 2,5 millions de traitements grâce au partage d'informations entre officines. Il a aussi permis de rappeler des lots de médicaments (58 l'an dernier), de diffuser des alertes sanitaires (24 au cours de l'année) et d'informer sur les ruptures d'approvisionnement. De nouvelles fonctionnalités sont attendues dans la lutte contre les médicaments falsifiés et le suivi des vaccinations. Un décret visant à augmenter la durée de conservation des données dans le DP à 21 ans pour les vaccins est en prévision.

- Voir le dossier pharmaceutique sur le [site du CNOP](#)

Conseil d'État (2014). Le numérique et les droits fondamentaux : Etude annuelle 2014 du Conseil d'Etat. Paris La Documentation française: 446.

<http://www.ladocumentationfrancaise.fr/var/storage/rapports-publics/144000541/0000.pdf>

Le numérique, parce qu'il conduit à la mise en données et à la mise en réseau du monde, pose problème aux droits fondamentaux : il met en question leur contenu et leur régime. S'il renforce la capacité des individus à jouir de certains droits, comme la liberté d'expression, la liberté d'entreprendre, il en fragilise d'autres, comme le droit à la vie privée ou le droit à la sécurité. L'étude annuelle du Conseil d'État intervient alors qu'un triple basculement se manifeste dans les innovations techniques, dans l'économie et dans l'appréhension du numérique par la société. Face à ces bouleversements, l'étude s'attache à repenser la protection des droits fondamentaux et à répondre aux questions en débat : la neutralité d'internet, sa gouvernance, le « droit à l'oubli », la propriété des données, leur exploitation et agrégation en Big Data, le rôle inédit des grandes « plateformes ». L'étude présente 50 propositions de l'étude dont l'objectif est de mettre le numérique au service des droits individuels et de l'intérêt général.

Cour des Comptes (2016). La modernisation des systèmes d'information hospitaliers : une contribution à l'efficacité du système de soins à renforcer. Sécurité sociale : Rapport 2016 sur l'application des lois de financement de la Sécurité sociale., Paris : Cour des Comptes: 35.

<https://www.ccomptes.fr/sites/default/files/EzPublish/20160920-rapport-securite-sociale-2016.pdf>

Ce rapport de la Cour des comptes sur l'application des lois de financement de la sécurité sociale s'inscrit dans le cadre de sa mission constitutionnelle d'assistance au Parlement et au Gouvernement. Un des chapitres fait un bilan des systèmes d'information à l'hôpital axés principalement sur l'informatique médicale et émet des recommandations pour en améliorer l'efficacité.

Cour des Comptes (2017). Sécurité sociale : Rapport 2017 sur l'application des lois de financement de la sécurité sociale. Paris Cour des Comptes: 729 , tabl.

https://www.ccomptes.fr/sites/default/files/2017-09/20170920-rapport-securite-sociale-2017_1.pdf

Ce rapport de la Cour des comptes sur l'application des lois de financement de la sécurité sociale s'inscrit dans le cadre de sa mission constitutionnelle d'assistance au Parlement et au Gouvernement. Dans cette édition 2017, la Cour des comptes estime que le déficit de la Sécurité sociale a reculé l'an dernier au prix, en partie, d'artifices comptables. La Cour recommande ainsi au gouvernement à ne pas relâcher l'effort et à aller encore plus loin. Concernant l'Assurance-maladie, qui reste l'homme malade de la Sécu avec un déficit stable en 2016, à 5,5 milliards d'euros, hors produit exceptionnel de CSG, la Cour dénonce également de nombreux biais qui affectent la sincérité des comptes, dont de fausses économies, des transferts opaques entre branches, des prélèvements trompeurs sur les réserves. Le rapport plaide ainsi pour le développement de la chirurgie ambulatoire et de la

télé médecine. Il préconise également un meilleur contrôle des dépassements d'honoraires des spécialistes libéraux.

Couty, E. p. (2001). L'informatisation du circuit du médicament dans les établissements de santé - approche par l'analyse de la valeur : quels projets pour quel objectifs ? Paris DHOS: 128 , 127 ann., 123 fig.

L'informatisation du circuit du médicament constitue une voie privilégiée pour l'amélioration des pratiques, à condition toutefois que cette démarche ne soit pas limitée à une simple automatisation de procédures, sans une indispensable réflexion sur les organisations à mettre en place. C'est avec cette préoccupation que la DHOS a lancé la réalisation d'une étude sur l'informatisation du circuit du médicament, avec l'objectif de mesurer, à l'aide de la méthode de " l'analyse de la valeur " fréquemment utilisée dans l'industrie, les retours qualitatifs et quantitatifs que chacun des acteurs concernés peut attendre de l'informatisation du circuit du médicament, que celle-ci soit totale ou partielle. Ce rapport s'attache à mettre en évidence les principaux enjeux de cette démarche, ainsi que les gains attendus valorisés sur la base d'exemples concrets, tirés du terrain. Il constitue ainsi un apport méthodologique original sur l'approche du retour d'investissement d'un projet d'informatisation, dont la principale finalité est cependant d'assurer la sécurité des malades (extrait du résumé d'auteur). Ce document est disponible sur internet à la page : <http://www.sante.gouv.fr/htm/actu/informat/intro.htm>

Curien, N. et Muet, P. A. (2004). "La société de l'information." Rapport Du Conseil D'analyse Économique(47): 311.

La révolution numérique constitue-t-elle une troisième révolution industrielle ? Nous fait-elle basculer dans la société de l'information ? Quelles politiques pour lutter contre la fracture numérique ? Quelle gouvernance mondiale de l'Internet ? Telles sont les questions que Nicolas Curien et Pierre-Alain Muet abordent dans leur rapport, élaboré dans le cadre de la préparation au Sommet mondial sur la société de l'information, organisé par l'ONU et l'UIT, qui se tient à Genève en décembre 2003 puis à Tunis au printemps 2005. Le rapport soutient que la révolution numérique n'est pas seulement une révolution de l'information et de la communication, mais bien une troisième révolution industrielle et que l'émergence de l'entreprise en réseau, l'autonomisation croissante du travail, le rôle accru des marchés financiers dans l'innovation, la recomposition de la gestion des savoir et de la connaissance en sont des phénomènes moteurs. Il met aussi en évidence un nouveau paradoxe de l'économie numérique : alors que les technologies de l'information et de la communication devaient en principe favoriser un fonctionnement plus efficace de l'économie de marché, elles distillent en fait les ingrédients d'une économie publique. Les auteurs avancent également différentes propositions afin que la France et l'Europe du Sud rattrapent leur retard face aux États-Unis et à l'Europe du Nord en amplifiant et soutenant notamment l'effort des collectivités locales en matière d'équipement des écoles. Ils recommandent enfin qu'à la suite du Sommet mondial, soit mise en place une véritable " corégulation multi-acteurs ", sous la forme de groupe de travail réunissant la puissance publique, les industriels et les utilisateurs, en charge de faire des propositions dans la perspective du Sommet mondial de Tunis.

Dionis du Séjour, J. et Etienne, J. C. (2004). Les télécommunications à haut débit au service du système de santé (2 tomes). Paris Assemblée Nationale: 2 vol. (138 +127).

Au moment où l'assurance maladie connaît l'une des crises les plus graves de son histoire et où tous les acteurs du système de soins vont devoir traverser des mutations très importantes, il est important d'évaluer l'apport potentiel des nouvelles technologies de l'information au système de santé français et de cibler les obstacles à leur développement. Ce rapport sur l'internet à haut débit et les systèmes de santé se trouve au coeur de l'actualité. Le débat sur la maîtrise des dépenses du système de soins impose de revoir en profondeur l'architecture du système de santé français, qui intègre peu ou pas les nouvelles technologies de l'information.. La première partie porte sur l'outil internet en tant qu'outil de formation et d'information. La deuxième partie aborde la télé médecine sous ces divers aspects : télésurveillance, téléconsultation, téléchirurgie? Le rapport termine sur des recommandations.

Door, J. P. (2008). Rapport d'information sur le dossier médical personnel. Rapport d'information ; 659. Paris Assemblée Nationale: 179 , ann.

<http://www.assemblee-nationale.fr/13/rap-info/i0659.asp>

Réalisé suite à la tenue de vingt réunions et à l'organisation de trente-deux auditions, ce rapport présente les quinze propositions de la mission Door pour relancer le dossier médical personnel (ou partagé). Le retard dans la mise en œuvre du projet est expliqué par la conception et la réalisation du DMP (qui) impliquaient des réponses préalables à de nombreuses questions techniques et juridiques, ce qui a rendu sa réalisation beaucoup plus complexe que prévu et a finalement empêché son aboutissement dans les délais fixés. La mission d'information pointe notamment un pilotage beaucoup trop distant de la part de l'administration centrale, l'existence d'une multiplicité de projets concurrents, la parcimonie des moyens accordés initialement au GIP-DMP, les multiples problèmes liés au changement de stratégie du GIP. Le rapport de la mission dresse également un bilan des acquis du projet, tels qu'ils sont apparus au fur et à mesure de ses auditions. Cette relance pourra en effet s'appuyer sur une infrastructure de communication qui est en voie de réalisation, sur la clarification en cours des questions d'organisation et de pilotage et sur une certaine maturation des décisions à prendre concernant la structure et le contenu du DMP, de même que les normes d'interopérabilité. La mission formule à la fin de son rapport une quinzaine de propositions pour relancer ce projet, notamment : Reprendre les expérimentations pendant un minimum de neuf mois orientées vers les usages du DMP (avec l'élaboration à titre transitoire d'un prototype polyvalent sur un support crypté et sécurisé de type mémoire USB ou autre) ; Consolider et valoriser les acquis du projet (le portail unique d'accès et l'identifiant de santé) ; Renforcer le pilotage du projet (pérenniser le financement du DMP, confirmer le GIP-DMP dans sa fonction de conduite opérationnelle du projet, affermir le ministère de la Santé dans son rôle de pilotage stratégique, impliquer la HAS et la CNAMTS) ; Développer les échanges électroniques de données entre les professionnels de santé, en vue de préparer l'interopérabilité de leurs systèmes informatiques ; Faire du DMP un outil simple et utile tant pour les professionnels que pour les patients ; Prévoir une généralisation progressive du DMP, ciblée en priorité sur certaines populations (maladies chroniques ou graves). Ces quinze propositions contribueront à éclairer les travaux de l'équipe resserrée - la task force - constituée par le gouvernement, dont les conclusions sont attendues pour le printemps, espère le rapporteur qui prévoit une période de sept ans pour que le DMP soit opérationnel. Il faudra entre un an et dix-huit mois pour régler la question de l'identifiant de santé et lancer les expérimentations, entre trois et quatre années pour la mise à niveau de toutes les infrastructures informatiques et pour tout ce qui a trait au portail d'accès unique, à l'interopérabilité, au langage numérique professionnel, et au bout de cinq à sept ans, avoir le retour des expérimentations. De plus, il faut être bien conscient que, dans le cadre d'un marché mondial de l'informatique médicale, l'informatisation des données de santé pourrait être effectuée par des opérateurs privés comme Microsoft, Google ou Yahoo, et que l'on serait ainsi bien loin de l'objectif poursuivi au moment de l'adoption de la loi de 2004. Si l'on veut garantir la sécurité et la protection des données de la population, il est donc impératif que le Gouvernement poursuive le chantier du DMP.

Dourgnon, P., et al. (2000). Résultats de l'enquête sur l'apport de l'informatique dans la pratique médicale libérale. Rapport Credes. Paris CREDES: 26 , carte, graph.

Le Comité de Gestion du Fonds de Réorientation et de Modernisation de la Médecine Libérale (F.O.R.M.M.E.L.) avec le concours du Conseil Supérieur des Systèmes d'Information de Santé (C.S.S.I.S.) et du Centre de Recherche d'Etude et de Documentation en Economie de la Santé (C.R.E.D.E.S.) a mis en place une étude sur l'apport de l'informatique dans la pratique médicale libérale. Ce fascicule présente les premiers résultats de cette enquête qui a été conduite à partir de l'expérience quotidienne de médecins volontaires. Ces résultats permettent de connaître l'utilisation effective de l'informatique par les médecins, d'orienter leur choix parmi les possibilités actuelles et aussi d'inciter les industriels à proposer des services plus accessibles et mieux adaptés.

Dourgnon, P., et al. (2001). L'apport de l'informatique dans la pratique médicale libérale. Rapport Credes. Paris CREDES: 139 , 118 tabl., 104 graph.

<http://www.irdes.fr/Publications/Rapports2001/rapportFormmel.pdf>

Le Comité de Gestion du Fonds de Réorientation et de Modernisation de la Médecine Libérale (F.O.R.M.M.E.L.) avec le concours du Conseil Supérieur des Systèmes d'Information de Santé (C.S.S.I.S.) et du Centre de Recherche d'Etude et de Documentation en Economie de la Santé (C.R.E.D.E.S.) a mis en place une étude sur l'apport de l'informatique dans la pratique médicale libérale. Ce rapport présente les résultats de cette enquête qui a été conduite à partir de l'expérience quotidienne de médecins volontaires. La première partie de ce document présente la méthodologie de l'enquête, l'échantillon de médecins participants, leur environnement informatique, décrit les fonctions étudiées et comment les médecins les utilisent. Les quatre parties suivantes présentent les évaluations de chacune des fonctions, de la plus utilisée (gestion du dossier médical du patient) à la moins utilisée. Dans la sixième partie, les auteurs présentent un classement des modules en fonction de critères de satisfaction et d'utilisation des médecins évaluateurs. Une dernière partie développe, sur un plan plus global, l'influence de l'arrivée de l'informatique dans le cabinet libéral au travers des réponses aux questions d'évaluation (l'utilité et l'acceptabilité pour le patient, l'impact sur la qualité de la pratique, le confort de travail, la sécurité des données) et aux questions d'opinion du questionnaire qui clôture l'enquête (le rôle de l'informatique, le bilan de l'informatisation des médecins, l'avenir de l'informatique dans la pratique libérale).

Fagniez, P. L. (2007). Le masquage d'informations par le patient dans son DMP. Paris MSSPS: 15.

L'article 38 de la loi informatique et libertés du 6 janvier 1978 permet à toute personne de s'opposer " pour des raisons légitimes " à ce que des données à caractère personnel la concernant fassent l'objet d'un traitement. La partie législative du code de la santé publique définit par ailleurs le principe général du droit des patients au secret sur leurs informations de santé ; elle prévoit notamment, dans son article L. 1110-4, un droit d'opposition du patient à l'échange d'informations entre deux professionnels qui le prennent en charge. Sur la base d'entretiens avec des professionnels de santé et des associations de patients, le rapport pose la question de la conciliation entre la bonne marche du processus de soins et le " droit de masquage " offert au patient dans le dossier médical personnalisé (DMP).

Faroudja, J. M., et al. (2005). Questions sur l'informatisation des dossiers médicaux, le partage et l'hébergement des données. Paris CNOM: 66.

Dans une première partie, ce rapport aborde quelques questions élémentaires comme les avantages et les inconvénients de l'informatisation ou les problèmes posés par la multiplication des dossiers (papier, électroniques, personnels). La suite du rapport est centrée sur le dossier médical personnel (DMP) : le DMP et la loi ; éthique et déontologie du DMP ; questions pratiques et principes incontournables. Dans sa conclusion, le rapporteur insiste sur la distinction que le praticien doit faire entre le DMP et son dossier professionnel (qui peut " rester le lieu des confidences intimes " et être organisé " selon sa méthode, ses habitudes et ses convictions ").

Fieschi, M. (2003). Les données du patient partagées : la culture du partage et de la qualité des informations pour améliorer la qualité des soins. Paris Ministère chargé de la Santé: 45 , ann.

<https://www.ladocumentationfrancaise.fr/rapports-publics/074000714-les-donnees-du-patient-partagees-la-culture-du-partage-et-de-la-qualite-des>

Afin de suivre les demandes d'évolution de la société, de répondre aux nouveaux droits des patients, de favoriser la coordination des soins et d'encourager l'émergence de nouvelles modalités d'exercice pour les professionnels de santé, il est nécessaire de mettre en place des systèmes d'information de santé adaptés. Ces nouvelles modalités doivent concourir à une plus grande responsabilisation des médecins et des patients, devenus davantage acteurs dans des situations touchant à leur santé. Ce rapport est le résultat d'une mission exploratoire confiée, en décembre 2003, à Monsieur Fieschi, afin d'élaborer des propositions sur le développement des dossiers médicaux partagés. Une première partie, centrée sur une présentation du contexte, de l'évolution des pratiques médicales et du développement des technologies de l'information et de la communication dans le domaine de santé, présente un bilan des forces et faiblesses de la situation en France afin de cadrer la faisabilité organisationnelle, juridique, technique et économique du projet. Une deuxième partie présente les recommandations. Elles portent sur une méthode expérimentale conduisant à court terme à une

évaluation permettant de définir le cadre définitif du projet ; les modalités de pilotage du projet ; un calendrier prévisionnel de l'expérimentation proposée. Des propositions pour le moyen terme et des mesures d'accompagnement sont également avancées.

Gagneux, M. (2009). Refonder la gouvernance de la politique d'informatisation du système de santé - Douze propositions pour renforcer la cohérence et l'efficacité de l'action publique dans le domaine des systèmes d'information de santé. Paris Ministère de la santé: 38.

<https://www.ladocumentationfrancaise.fr/rapports-publics/094000345/>

Les difficultés de mise en œuvre du dossier médical personnel ont contribué à mettre en évidence les faiblesses de la gouvernance du système d'information de santé : réticences psychologiques et culturelles chez certains professionnels de santé, complexité d'organisation du système de santé et rigidités de sa gouvernance ont été des freins à la pleine utilisation des technologies de l'information et de la communication dans le domaine de la santé. Tel est le constat du présent rapport qui présente douze propositions visant à poser un nouveau « cadre de gouvernance et de régulation », compte tenu des réformes structurelles en préparation ou mises en œuvre (création des agences régionales de santé, réforme de la gouvernance hospitalière, mise en place de la tarification à l'activité à l'hôpital, plan d'investissement "hôpital 2012", programme de relance du DMP et des systèmes d'informations partagés de santé...).

Gagneux, M., et al. (2008). Pour un dossier patient virtuel et partagé et une stratégie nationale des systèmes d'information de santé. Paris Mission de relance du DMP: 120.

http://www.i-med.fr/IMG/pdf/Rapport_Gagneux_11_avril_2008.pdf

La mission de relance du projet de DMP a été constituée en décembre 2007 pour établir des propositions sur le cadre stratégique, l'amélioration de la gouvernance et l'organisation de la concertation sur le DMP, après la publication d'un rapport d'audit très sévère sur le pilotage du dispositif. Le rapport s'organise en huit chapitres, abordant les "enjeux stratégiques des systèmes d'information médicale partagée", les principes d'actions de relance du DMP, les concepts de dossier médical, la "valeur d'usage" et les services offerts par le DMP, le consentement du patient, l'architecture du "système DMP", la relance et le déploiement du dispositif et la gouvernance des systèmes d'information de santé. Ce rapport plaide pour une relance rapide du DMP et annonce une feuille de route lisible, afin de répondre aux "attentes fortes" et aux "doutes" des différents acteurs du monde de la santé sur le projet, dont le processus de déploiement, initialement prévu au 1er janvier puis au 1er juillet 2007, avait été suspendu à l'arrivée de Roselyne Bachelot au ministère de la santé en mai 2007.

GieSesamVitale (2012). Sesam-vitale. Rapport d'activité 2011. Le Mans Gie Sesam-vitale: 18.

Le rapport d'Activité 2011 du GIE SESAM-Vitale est en ligne. Il illustre les évolutions en cours au GIE et anticipe son principal challenge pour les années à venir : en relation étroite avec les industriels, accompagner la mutation stratégique vers les services en ligne à valeur ajoutée, tout en garantissant en permanence un niveau de services élevé pour l'infrastructure actuelle, essentielle à notre système de santé. Quelques chiffres : 1,15 milliard de Feuilles de Soins Electroniques (régimes obligatoires) certifiées (soit 6 % de plus qu'en 2010) avec une qualité de service de 99,92% « sans rejet technique ». 53 % des FSE sont réalisées à partir d'un logiciel en version 1.40. 7,6 millions de Demandes de Remboursements Electroniques émises à destination des complémentaires santé, soit deux fois plus qu'en 2010 (résumé d'auteur).

GIP DMP (2007). Le projet DMP : Rapport d'activité 2006/2007. Paris G.I.P. - D.M.P.: 35.

Cette publication dresse un bilan d'étape détaillé de l'état d'avancement du projet DMP. Après un rappel des enjeux et des objectifs de ce grand projet de santé publique, ce rapport d'activité passe en revue les chantiers déjà menés à bien (environnement législatif et juridique, expérimentations, etc.) et ceux qui restent à mettre en œuvre pour assurer la généralisation du DMP en 2008. Vous y trouverez aussi de nombreux témoignages des acteurs de notre système de santé sur le DMP: patients, professionnels de santé, responsables et dirigeants des structures concernées, etc. Le GIP-DMP

entend en effet placer la concertation et la participation active des acteurs de terrain au coeur de son action et de sa stratégie.

Gorce, G. et Pillet, F. (2014). Rapport d'information sur l'open data et la protection de la vie privée. Rapport d'information du Sénat ; 469. Paris Sénat: 84.
<http://www.senat.fr/rap/r13-469/r13-4691.pdf>

La France s'est résolument engagée sur la voie de l'ouverture et du partage des données publiques, plus connue sous le nom d'open data. Deux idées animent cette politique. Comptables de leur gestion auprès des citoyens, les administrations leur ouvrent leurs fichiers. Elles leur donnent ainsi le moyen de mieux les contrôler. Par ailleurs, à l'ère du numérique, où l'information est source de richesse, elles leur offrent l'opportunité d'exploiter le formidable gisement que constituent ces données. En créant une mission d'information chargée d'étudier l'open data et la protection de la vie privée de nos concitoyens, la commission des lois a souhaité poursuivre sa réflexion sur les nouveaux usages numériques et la façon dont ils peuvent se concilier avec les principes fondamentaux que le législateur a posés dès la fin des années 1970. L'open data soulève à cet égard une question spécifique : en principe, il exclut toute diffusion de données à caractère personnel, mais bien souvent, les données détenues par les administrations ont été élaborées à partir d'informations individuelles, qui peuvent être retrouvées grâce aux formidables capacités de traitement que permet l'informatique moderne. L'impératif de protection de la vie privée est-il en mesure de toujours prévaloir ? Comment s'en assurer ? À l'issue de leurs travaux, les rapporteurs de la mission d'information, les sénateurs Gaëtan Gorce et François Pillet jugent aujourd'hui nécessaire de faire d'une exigence fondamentale -la protection de la vie privée de nos concitoyens- une opportunité pour donner une nouvelle impulsion au déploiement de l'open data (résumé d'éditeur).

Gratieux, L. et Olivier, R.. (2016). L'optimisation des échanges de données entre organismes de protection sociale, Paris : IGAS

[BDSP. Notice produite par MIN-SANTE kDROxAHT. Diffusion soumise à autorisation]. Par lettre du 9 juillet 2015, le directeur de cabinet de la ministre des affaires sociales, de la santé et des droits des femmes et le directeur de cabinet du secrétaire d'Etat au budget ont donné mission à l'IGAS et à l'IGF d'analyser les différents dispositifs d'échanges de données mis en place entre les organismes de protection sociale et entre ceux-ci et des partenaires extérieurs à la sphère sociale, tels que l'administration fiscale, et d'identifier les moyens de les optimiser, pour atteindre quatre objectifs fondamentaux : l'accès aux droits et la détection des droits, le paiement à bon droit, la lutte contre la fraude et la protection des données personnelles.

Gratieux, L. et Ollivier, R. (2006). Audit de l'organisation et du pilotage des organismes œuvrant à l'informatisation du système de santé. Rapport IGAS ; 2006 113. Paris Igas: 121.
https://www.ladocumentationfrancaise.fr/docfra/rapport_telechargement/var/storage/rapports-publics/074000669.pdf

La modernisation de la gestion du système de santé implique, selon le présent rapport, la mise en place de dispositifs d'échanges de données informatisées entre les acteurs, professionnels et établissements de santé, usagers et organismes d'assurance maladie obligatoire et complémentaire. Pour mettre en place ces dispositifs, la multiplicité des acteurs concernés et la technicité du domaine ont conduit à créer des structures spécialisées constituées sous forme de groupements d'intérêt public (GIP) ou d'intérêt économique (GIE). Ce rapport présente l'organisation de la mise en œuvre des systèmes d'information dans le domaine de la santé et de l'assurance maladie. Il constate que l'organisation structurée verticalement par projet est susceptible de donner lieu à des redondances avec l'émergence de nouveaux systèmes d'information. Il propose d'engager une redistribution des fonctions des organismes fondées sur la reconnaissance de leur "coeur de métier". Il expose ensuite les modalités de pilotage des organismes et des projets et propose de clarifier l'attribution des responsabilités en élaborant une stratégie partagée et en redéfinissant les moyens et l'organisation. Est jointe au rapport une note complémentaire sur les perspectives de fusion ou de regroupement d'organismes œuvrant à l'informatisation du système de santé.

HAS (2005). Accès aux informations concernant la santé d'une personne. Modalités pratiques et accompagnement. (Nouvelle version modifiée des recommandations de l'Anaes de février 2004, suite à une décision du Conseil d'État en date du 26 septembre 2005). Paris HAS: 27

http://www.has-sante.fr/portail/upload/docs/application/pdf/Acces_Info_sante_Dec_2005.pdf

[BDSP. Notice produite par EHESP mn7CR0xJ. Diffusion soumise à autorisation]. Les recommandations concernent les modalités et l'accompagnement de l'accès aux informations de santé relatives à une personne, détenues par des professionnels de santé, des établissements de santé, publics ou privés, ou des hébergeurs. Elles sont destinées à l'ensemble des professionnels de santé quel que soit leur mode d'exercice (libéral, public, en établissements de santé, en structures sanitaires ou médico-sociales, etc.) et à l'ensemble des personnels de ces établissements et structures, qui sont tous directement concernés par leur mise en œuvre. Elles peuvent être utiles également aux personnes ayant recours au système de santé pour leur permettre d'être informées des modalités d'accès aux informations concernant leur santé. Elles visent à faciliter l'application des articles L. 1111-7, L. 1112-1 et R. 1111-1 à R. 1112-9 du Code de la santé publique (loi n° 2002-303 du 4 mars 2002 relative aux droits des malades et à la qualité du système de santé et décret n° 2003-462 du 21 mai 2003 relatif aux dispositions réglementaires des parties I, II et III du Code de la santé publique). Il s'agit de contribuer par des mesures organisationnelles et de bonnes pratiques à l'exercice d'un droit reconnu par la loi et d'organiser, si besoin, un accompagnement personnalisé de l'accès aux informations de santé. Les points suivants sont abordés : - Les principes généraux ; Le dossier : un élément de la qualité des soins ; L'information de la personne sur l'accès au dossier ; La communication du dossier (réception et gestion de la demande, modalités de communication du dossier et accompagnement de l'accès, coût de l'accès au dossier) ; Cas particulier des mineurs. Ces recommandations, établies en décembre 2005, actualisent et remplacent les recommandations sur le même thème rendues publiques par l'Anaes en février 2004.

HAS (2009). Le dossier médical en santé au travail. Consensus formalisé. Recommandations professionnelles. Saint-Denis HAS: 96.

http://www.has-sante.fr/portail/upload/docs/application/pdf/2009-03/rbpp_-_dossier_medical_en_sante_au_travail_-_argumentaire.pdf

[BDSP. Notice produite par HAS C9HrR0x9. Diffusion soumise à autorisation]. Ces recommandations ont pour objectif d'améliorer la qualité des informations du dossier médical en santé au travail (DMST) afin de permettre d'évaluer le lien entre l'état de santé du travailleur et le (s) poste (s) et les conditions de travail actuels et antérieurs. L'accent est mis sur la traçabilité des expositions professionnelles, des données de santé et des informations, propositions et avis délivrés au travailleur par le médecin du travail. Les questions auxquelles répondent les recommandations sont les suivantes : 1. Quels sont la définition et les objectifs du DMST ? 2. Quelle est la nature des données qui doivent figurer dans un DMST (structure du dossier, contenu du dossier) ? 3. Quels sont les principes de tenue et d'utilisation du DMST ? Règles générales concernant la tenue et le remplissage du DMST - Utilisation des thésaurus - Modalités et critères de choix du logiciel de gestion du DMST - Conservation et archivage du DMST La question des modalités de transmission du DMST n'est pas abordée. En complément des recommandations, est également publiée une liste de quinze critères de qualité utiles pour les professionnels de santé souhaitant évaluer leurs pratiques.

HAS (2012). Référentiel de certification par essai de type des logiciels hospitaliers d'aide à la prescription. Référentiels de certification. Saint-Denis : Haute Autorité de Santé: 42.

http://www.has-sante.fr/portail/upload/docs/application/pdf/2012-06/referentiel_certification_lap_hospitalier_juin12.pdf

[BDSP. Notice produite par HAS CR0xIHFq. Diffusion soumise à autorisation]. Le champ d'application du référentiel de juin 2012 concerne les LAP destinés aux établissements de santé. Il a pour objectif de promouvoir des fonctionnalités susceptibles : - d'améliorer la qualité de la prescription ; - de faciliter le travail du prescripteur et de favoriser la conformité réglementaire des prescriptions ; - de diminuer le coût du traitement à qualité égale. Le référentiel de certification traite essentiellement de la prescription médicamenteuse et aborde des questions comme le mode de choix des médicaments (à partir de la dénomination commune internationale, du nom de marque.), les alertes de contre-

indication et d'interaction, la disponibilité de différentes informations sur le médicament, les prescriptions pour les patients hospitalisés et les prescriptions destinées aux patients externes. L'ergonomie et les observations des utilisateurs ont également été prises en compte dans l'élaboration de ce référentiel. Le document "Précisions sur la certification des LAP" précise certains points de la procédure, par exemple les médicaments pour lesquels l'utilisation de la Dénomination Commune Internationale n'est pas exigée par cette certification. Les fonctions de sécurité d'un LAP ne sont véritablement efficaces que si l'information sur les médicaments mise à sa disposition est de qualité. Un LAP ne peut donc postuler à cette certification que s'il s'appuie sur une Base de données sur les Médicaments agréée par la HAS. La HAS publie un scénario de tests de certification et mettra à disposition des questions-réponses autour de cette procédure. Cette certification est réalisée par des organismes certificateurs accrédités par le Comité français d'accréditation (Cofrac). Les organismes certificateurs peuvent faire leurs demandes d'information relatives : - au référentiel de certification auprès de la HAS ; - au programme d'accréditation auprès du Cofrac. Les références des organismes accrédités par le Cofrac pour cette certification seront disponibles sur cette page.

Jegou, J. J. (2005). L'informatisation dans le secteur de la santé. Paris Sénat: 65.

<http://www.senat.fr/rap/r05-062/r05-0621.pdf>

Ce rapport présente, la réalité contrastée de l'informatisation du secteur de la santé en France et analyse ses faiblesses (défaillance du pilotage global de la politique d'informatisation, retard des établissements publics de santé dans ce domaine, cloisonnement des systèmes d'information et inadéquation de la formation des professionnels de santé). Ce rapport insiste également sur les difficultés de mise en place du dossier médical personnel. Dix propositions sont formulées par le rapporteur.

Jegou, J. J. (2007). Rapport d'information sur le suivi du référé de la Cour des Comptes concernant l'interopérabilité des systèmes d'information de santé. Rapport d'information ; n° 35. Paris Sénat: 327 , ann.

<http://www.senat.fr/rap/r07-035/r07-0351.pdf>

Le présent rapport présente, tout d'abord, les observations de la Commission des finances sur le système actuel d'information de santé français. Puis, il comporte trois annexes : - le référé n° 46485 de la Cour des comptes sur l'interopérabilité des systèmes d'information en santé, accompagné de la lettre d'envoi du Premier président de la Cour des comptes au ministre de la santé et des solidarités ; - la réponse du directeur de cabinet du ministre de la santé et des solidarités au référé précité ; - enfin, le chapitre X du rapport de la Cour des comptes sur l'application des lois de financement de la sécurité sociale, paru en septembre 2007, intitulé « le partage des données entre les systèmes d'information de santé ». Les réponses adressées aux observations de la Cour des comptes par les ministres, les administrations et les organismes concernés ne sont pas reproduites dans le cadre du présent rapport.

Khenouf, M. et Ruol, V. (2011). Evaluation du développement de l'offre en matière de systèmes d'information hospitaliers et d'analyse stratégique du positionnement des filières publiques du SIH. Rapport Igas ; RM2011-029P. Paris IGAS: 65.

https://www.ladocumentationfrancaise.fr/docfra/rapport_telechargement/var/storage/rapports-publics/114000170.pdf

Par lettre du 20 mai 2010, la ministre de la santé et des sports a saisi le chef de l'IGAS d'une mission portant sur « l'évaluation du développement de l'offre en matière de système d'information hospitalier (SIH) et sur l'analyse stratégique du positionnement des opérateurs publics en SIH ». Cette mission s'inscrit dans le cadre de la mise en place d'un comité de pilotage stratégique des SIH, chargé d'élaborer un programme d'action à moyen terme en faveur du développement des systèmes d'information des établissements de santé (résumé d'auteur).

Lasbordes, P. (2009). Rapport sur le Dossier Médical Personnel (DMP) : quel bilan d'étape pour quelles perspectives ? (compte rendu de l'audition publique du 30 avril 2009). Rapport de l'Assemblée Nationale ; 1847 ; Rapport du Sénat ; 567. Paris Assemblée nationale ; Paris Sénat: 110.

<http://www.senat.fr/rap/r08-567/r08-5671.pdf>

L'Office parlementaire d'évaluation des choix scientifiques et technologiques (OPECST) a organisé le 30 avril 2009 une audition publique sur le Dossier médical personnel (DMP) dont la création est prévue depuis l'adoption d'une loi en 2004 et dont les enjeux sont jugés essentiels, tant pour la qualité des soins que pour la protection des données personnelles de santé. Cette audition publique avait pour objet, d'une part, de faire le point sur l'expérimentation telle qu'elle a été menée jusqu'à présent, en examinant les avancées réalisées ainsi que les difficultés rencontrées, et d'autre part, d'étudier les perspectives d'avenir du projet, à la lumière notamment du plan de relance annoncée par le ministère de la santé et des sports et en prenant en compte les solutions technologiques offertes dans ce domaine. En réunissant, sur une journée, les principaux acteurs du projet, les auteurs de rapports visant à en évaluer l'état de réalisation, la CNIL, des représentants du ministère, des professionnels de santé et des usagers, ainsi que des entreprises du secteur, l'audition se proposait de confronter les analyses portant sur les conditions dans lesquelles le projet a été conduit, ainsi que les recommandations formulées à la suite de ce retour d'expérience.

Le Menn, J. et Milon, A. (2012). Rapport d'information sur le financement des établissements de santé. Rapport d'information du Sénat ; n° 703. Paris Sénat: 340 , tabl., graph.
<http://www.senat.fr/rap/r11-703/r11-7031.pdf>

Huit ans après l'introduction du principe de la tarification à l'activité (T2A) en MCO qui a, de l'avis unanime, bousculé la communauté hospitalière, la Mecsa a souhaité évaluer cet outil de répartition des ressources fréquemment décrié, comprendre la façon dont il a été mis en œuvre et tracer des pistes pour son évolution. Quels ont été les effets de cette réforme systémique sur les décisions de soins et sur le fonctionnement des établissements ? Comment se répartissent aujourd'hui leurs recettes ? Comment sont construits les tarifs et à quoi correspondent-ils ? La T2A a-t-elle entraîné une détérioration de la qualité des prises en charge ? Après une vingtaine d'auditions et six déplacements permettant de visiter neuf établissements publics et privés, le présent rapport fournit des réponses à ces questions et propose des mesures d'amélioration, afin de prendre en charge non plus la maladie, comme le fait trop la T2A aujourd'hui, mais le malade dans la globalité de son parcours.

LESSIS (2007). Le DMP au point mort. Pour la relance d'un projet d'intérêt national. Recommandations à l'usage des décideurs de l'exécutif, des professionnels de santé et des associations de santé. Neuilly sur Seine : Les Entreprises des Systèmes d'Information Sanitaires et Sociaux: 11.

Après avoir rappelé l'analyse de l'actuelle ministre de la Santé qui estime le dossier DMP "au point mort" et nécessitant d'être "rapidement relancé", les auteurs retracent dans la première partie du document l'historique tourmenté de ce dossier : objectif initial dévoyé, absence de visibilité et de concertation, erreurs répétées de la maîtrise d'ouvrage et retards consécutifs. Cette partie introductive s'achève avec un rappel des objectifs comparés de l'historique des remboursements (alias Web médecin). Pointant les limites de l'outil de la CNAMTS, les auteurs rappellent qu'il ne saurait constituer une alternative au DMP en raison de la finalité éloignée des deux projets. La seconde partie déroule un scénario qualifié de "réaliste" pour relancer le chantier au point mort. Estimant que l'absence d'identifiant national de santé ne constitue pas un obstacle à la relance du DMP, les rédacteurs recommandent la mise en œuvre d'un socle de spécifications fonctionnelles opposable à tous, déroulés dans une dynamique de rupture positive articulée autour d'un engagement des industriels sur des objectifs contractuellement définis.

MISS (2009). Etat des lieux et perspectives de plate-formes régionales de services. Programme de relance du DMP et des systèmes d'information de santé. Paris Mission de Préfiguration de l'Agence des Systèmes d'Information Partagés de Santé: 70.

La présente étude s'inscrit dans le cadre d'une commande passée au GIP DMP et au GMSIH (Groupement pour la modernisation du système d'information hospitalier) par la MISS (Mission pour l'informatisation du système de santé) et la DHOS (Direction de hospitalisation et de l'organisation des soins) - Cf. lettre de mission datée du 9 janvier 2008. Elle propose les bases d'une organisation et d'un cadre de relations renouvelés entre les régions et les acteurs nationaux pour le développement, sur tout le territoire, des systèmes d'information partagés de santé . Elle s'appuie sur les enseignements d'une histoire commune et d'une analyse partagée. Le présent document aborde la question du

développement des plate-formes de services et la possibilité d'une modernisation coordonnée des systèmes d'information de santé par la fourniture : d'un état des lieux de l'existant, d'une synthèse des attentes exprimées par les acteurs institutionnels, opérationnels et industriels, d'une analyse des expériences conduites au regard de la construction d'un système de portée nationale, de recommandations aux acteurs afin de mettre en cohérence les actions nationales et régionales, de conseils pratiques à l'attention des maîtrises d'ouvrage.

Morange, P. (2017). Rapport d'information sur les données médicales personnelles inter-régimes détenues par l'assurance maladie, versées au SNIIRAM, puis au Système national des données de santé (SNDS). Paris Assemblée nationale: 149.

<http://www.assemblee-nationale.fr/14/pdf/rap-info/i4533.pdf>

Ministère chargé de la Santé (2008). Organisation du secours à la personne et de l'aide médicale urgente. Paris Ministère chargé de la santé: 64 , ann.

Ce rapport présente le référentiel commun qui permettra de mieux organiser la prise en charge des appels arrivant au 15 et/ou au 18. Ce référentiel a été élaboré dans le cadre d'un groupe de travail quadripartite associant les représentants des structures de médecine d'urgence, des services d'incendie et de secours et des services des ministères concernés.

Ministère chargé de la Santé (2014). Rapport de la Commission Open data en santé. Paris Ministère chargé de la Santé: 63 +59 , ann.

http://www.drees.sante.gouv.fr/IMG/pdf/rapport_final_commission_open_data-2.pdf

http://www.drees.sante.gouv.fr/IMG/pdf/annexes_rapport_open_data.pdf

La Commission " open data en santé ", qui s'est réunie de novembre 2013 à mai 2014, avait pour mission de débattre, dans un cadre pluraliste associant les parties prenantes, des enjeux et des propositions en matière d'accès aux données de santé. Son rapport, remis le 9 juillet 2014 à la ministre de la Santé, retrace les travaux et discussions de la Commission. Adopté consensuellement par l'ensemble des membres de la commission, qui partagent des attentes communes et fortes, il dresse tout d'abord un panorama de l'existant : définitions des concepts, état du droit, présentation de la gouvernance, présentation de l'accès aux données du SNIIRAM et du PMSI, cartographie des données de santé et enseignements tirés des expériences étrangères. Dans une seconde partie, il évoque les enjeux pour l'avenir. Enfin, il identifie les actions à mener : données à ouvrir en open data, orientations en matière de données réidentifiantes, données relatives aux professionnels et aux établissements.

Ministère chargé de la Santé (2017). Promouvoir une démarche active visant à faciliter l'accès aux données de santé à des fins de santé publique, de recherche et de développement industriel - Rapport du groupe CSF mesure 1-5. Paris Ministère chargé de la santé: 82.

http://drees.social-sante.gouv.fr/IMG/pdf/rapport_csf.pdf

L'exploitation encadrée des données de santé constitue un levier majeur pour la recherche et le développement d'innovations ainsi que pour la mise à disposition de nouvelles technologies en santé. Par ailleurs, l'accès aux données répond à la nécessité pour les entreprises de fournir des études aux autorités, afin de répondre aux exigences d'évaluation, notamment dans le cadre de l'accès au marché, du suivi et de la sécurité en conditions réelles d'utilisation des produits de santé. Un cadre de dialogue a été mis en place au sein d'un groupe de travail réunissant pouvoirs publics et industriels dans le cadre de la mesure 1-5 « Promouvoir une démarche active visant à faciliter l'accès aux données de santé à des fins de santé publique, de recherche et de développement industriel » du Comité stratégique de filière des industries et technologies de santé. Les résultats des travaux approfondis menés par ce groupe de travail entre septembre 2016 et mars 2017, avant la création de l'Institut national des données de santé en avril 2017, sont restitués dans le présent rapport composé : d'un guide de l'utilisateur présentant la gouvernance générale des accès au système national des données de santé (SNDS) et les procédures de dépôts de dossiers ;

Ngouyombo, B. (2010). Réussir le DMP, Paris : Institut Montaigne

Irdes - Pôle documentation - Marie-Odile Safon

www.irdes.fr/documentation/syntheses-et-dossiers-bibliographiques.html

www.irdes.fr/documentation/syntheses/e-sante.pdf

www.irdes.fr/documentation/syntheses/e-sante.epub

Le dossier médical personnel (DMP) est défini par le ministère de la Santé comme : « un ensemble de services permettant aux patients et aux professionnels de santé autorisés par celui-ci de partager, sous forme électronique, des informations de santé jugées utiles et pertinentes pour améliorer la prévention, la continuité, la coordination et la qualité des soins. Personnel et partagé, il est accessible en tout point du territoire et à tout moment ». Introduit par la loi du 13 août 2004, le DMP aurait dû être mis en place en 2007, il y a trois ans déjà. Après de nombreux écueils, les autorités ont délaissé le projet alors que fleurissaient des initiatives locales innovantes. En avril 2009, le ministère de la Santé annonce une relance du DMP en promettant le déploiement d'une première version nationale avant fin 2010. Meilleure coordination des soins, maîtrise des dépenses, accès facilité à l'ensemble des informations concernant les patients? Les difficultés rencontrées lors de la mise en œuvre du DMP ont été à la hauteur des enjeux.

Ravignon, B., et al. (2013). Les coûts de gestion de l'assurance maladie. Paris IGAS: 112 +annexes.

<http://www.igas.gouv.fr/spip.php?article424>

Le ministre des affaires sociales et de la santé et le ministre délégué chargé du budget ont demandé à l'Inspection générale des affaires sociales (IGAS) et à l'Inspection générale des finances (IGF) de conduire une mission relative à la gestion de l'assurance maladie obligatoire (AMO) et complémentaire (AMC). Cette mission s'inscrit dans le cadre des travaux lancés pour mettre en œuvre la démarche de « modernisation de l'action publique » (MAP) initiée par le Gouvernement. Après avoir établi un diagnostic de la structuration et des coûts de gestion de l'assurance maladie obligatoire et complémentaire, le rapport détaille les recommandations de la mission en matière d'amélioration des processus métier, de recherche d'efficacité par comparaison aux meilleures pratiques constatées et de réorganisation structurelle de l'assurance maladie. Puis, il conclut sur la combinaison de ces différents axes, sur le calendrier de déploiement des actions à entreprendre et sur les gains à attendre à court terme (2017) et à moyen terme (2020) (résumé de l'éditeur).

Sénat (2000). L'information des malades et l'accès au dossier médical. Les documents de travail du Sénat ; Série "législation comparée". Paris Sénat: 25.

Alors que la France s'interroge à nouveau sur le droit d'accès du patient à son dossier médical dans le cadre du projet de loi sur la modernisation sociale, cette étude analyse comment l'information des malades et l'accès au dossier médical sont organisés chez plusieurs de nos voisins : Allemagne, Belgique, Danemark, Grande-Bretagne et Pays-Bas. Elle permet notamment de mettre en évidence que l'accès au dossier médical est prévu par la loi au Danemark, en Grande-Bretagne et aux Pays-Bas, et par la jurisprudence dans les autres pays ; que les patients disposent de plus de droits dans les pays qui ont légiféré. Ce document constitue un instrument de travail élaboré à l'intention des Sénateurs par la Division des Etudes de Législation Comparée du Service des Affaires Européennes. Il a un caractère informatif et ne contient aucune prise de position susceptible d'engager le Sénat

Syntec (2010). Livre blanc : l'hôpital numérique à l'heure de l'ouverture : des SIH vers un système d'information et de communication en santé. Paris Syntec: 72.

http://www.assisesdunumerique.fr/news/LB_SYNTEC_hopital%20BD.pdf

Syntec informatique, porte-parole de l'industrie des logiciels et services, a profité du salon pour présenter son livre blanc : L'Hopital Numérique à l'heure de l'ouverture : Parcours patient, pratiques médicales, lien avec la médecine de ville, réseaux de soins, collectivités, professionnels de santé, fournisseurs... L'hôpital se transforme et nécessite d'être accompagné dans sa transformation, notamment au niveau de la fluidification des informations du suivi des patients. L'ouvrage propose un certain nombre de pistes de réflexion afin d'intégrer la question des nouveaux outils technologiques dans cette transformation du monde de la santé.

Taib, G. (2003). Mission d'appui convergence entre cartes ordinales et cartes de professionnels de santé. Paris IGAS: 86.

Ce rapport présente les résultats de la Mission confiée à Monsieur Taïb, en mai 2002, en vue d'étudier l'évolution de la carte professionnelle de santé (CPS) mise en œuvre dans le cadre du projet Sesam-Vitale, en carte d'identité professionnelle, telle que le souhaitent les ordres professionnels et le Président de la Cnamts. Après une analyse contextuelle, il émet un ensemble de recommandations s'appuyant sur un argumentaire historique et technique sous forme d'annexes thématiques.

Tajahmady, A. et Cauterman, M. (2009). Le dossier patient dans les hôpitaux et les cliniques. Rapport final. Paris Meah: 32.

La Mission nationale d'expertise et d'audit hospitaliers (MeaH) a mené une mission d'accompagnement de 8 établissements de santé français durant 18 mois sur le thème du dossier patient. La méthodologie employée comprenait 4 phases : diagnostic, plans d'actions, mise en œuvre, évaluation capitalisation. Cinq axes de travail ont été retenus : politique, circuit (archivage), contenant, contenu et usages (comptes-rendus d'hospitalisation, loi du 4 mars 2002). Le rapport final présente les principales réalisations et enseignements du chantier. À travers des actions organisationnelles et managériales simples, et l'utilisation d'outils classiques de gestion de projet, les établissements du groupe de travail ont réussi à améliorer la conformité du contenu de leur dossier patient, et les délais d'envoi des comptes-rendus hospitalisation. D'autres réalisations, sur la réduction du volume des archives, la mise en place d'un dossier patient papier unique ou l'informatisation du dossier patient ont été atteintes. Les résultats obtenus montrent tout l'intérêt qu'une démarche projet centrée sur les aspects organisationnels du dossier patient peut avoir. Ils soulignent aussi les dangers que l'absence d'une telle réflexion peut présenter lorsqu'un établissement s'engage dans une démarche d'informatisation ou de numérisation de son dossier patient.

ÉTUDES FRANÇAISES

(2019). "Le dossier pharmaceutique : à renforcer pour plus d'utilité pour les soins." Revue Prescrire **39**(423): 57-59.

Conçu à l'origine pour les pharmaciens d'officine, le dossier pharmaceutique recensant les médicaments dispensés à un patient est devenu accessible aux pharmaciens et aux médecins exerçant à l'hôpital. Quelques études ont évalué l'utilité du dossier pharmaceutique en pratique. Cet article rend compte de ces diverses évaluations.

(2004). "Réseaux d'imagerie médicale et systèmes d'information au service du patient." Gestions Hospitalières(434): 184-190.

[BDSP. Notice produite par ENSP R0xP8RIB. Diffusion soumise à autorisation]. L'association Imagerie Santé Avenir a pour mission de promouvoir les atouts et les spécificités de l'imagerie médicale dans sa contribution aux solutions économiques et scientifiques utiles à l'amélioration de la santé des Français. Dans cet article, elle montre que le développement des réseaux d'imagerie médicale constitue une priorité, leurs enjeux principaux étant l'amélioration de la qualité des soins et l'augmentation de la productivité des services de santé. Après une présentation des enjeux et des modalités d'installation (méthode, coût) d'un tel réseau, elle évalue le taux d'équipement en Europe et s'inquiète du retard pris par la France.

(2009). "Feuilles de soins papier ou électroniques ? Les pratiques des médecins et des professionnels de santé." Point D'information (Cnamts): 11.

http://www.ameli.fr/fileadmin/user_upload/documents/Feuilles_de_soins_papier_VF.pdf

Certains professionnels restant encore réticents à la télétransmission, l'Assurance Maladie a voulu comprendre pourquoi de telles disparités de pratiques subsistaient d'un professionnel de santé à l'autre. L'objectif étant de faire un point sur les pratiques des professionnels de santé, et en particulier des médecins, pour cerner d'éventuels freins au recours à la feuille de soins électronique, dans le contexte des dispositions de l'article 53 de la loi Hôpital Santé Patients Territoires du 21 juillet 2009.

Adda, D. (2010). "Tic et Hôpital. Le retour sur investissement, au service de l'équilibre budgétaire." Gestions Hospitalières(495): 261-263.

[BDSP. Notice produite par EHESP R0x8m7Gr. Diffusion soumise à autorisation]. Le groupement pour la modernisation du système d'information hospitalier (GMSIH) a publié un guide à destination des établissements pour les aider dans leur choix de dépenses d "investissement". Dans le cadre de la réforme hospitalière et du programme "hôpital 2012", les décisions et moyens mis en œuvre concernant le développement ou la modernisation des systèmes d'informations hospitaliers doivent désormais s'inscrire dans une démarche de bonnes pratiques d'achat. Le retour sur investissement (ou return on Investment, ROI) fait naturellement partie des outils d'analyses intégrées dans la gestion de ces grands projets. Il fait partie du processus décisionnel, se révèle un critère de choix et un outil de gestion de projet dans le cadre des relations hôpitaux/fournisseurs.

Aleksy, B., et al. (2011). "Modélisation des systèmes hospitaliers : des laboratoires de recherche en informatique et des CHU unissent leurs compétences." Techniques Hospitalières(729): 43-46.

[BDSP. Notice produite par EHESP AI9R0x8B. Diffusion soumise à autorisation]. En 2004, le CHRU de Clermont-Ferrand a fait appel au laboratoire d'informatique, de modélisation et d'optimisation des systèmes (Limos) du Centre national de la recherche scientifique, unité mixte de recherche 6158, afin de modéliser une partie de son organisation. L'idée était de construire une base de connaissance suffisamment détaillée qui permette une simulation et une analyse précise des organisations, qui fournisse un ensemble d'outils d'aide à la décision et qui assure un accompagnement au changement pour les professionnels de santé. Ces études de modélisation ont fait apparaître des problèmes nouveaux et difficiles à résoudre et ont conduit les CHRU de Clermont-Ferrand, Montpellier, Marseille et des laboratoires de recherche en informatique à construire un partenariat interétablissements sur les domaines de l'informatique, des systèmes d'information et de l'organisation. Cet article fait le point sur la méthodologie de recherche et les résultats obtenus dans le cadre du premier partenariat et décline les objectifs et axes de travail développés dans le second projet.

Alexandre, L., et al. (2001). "L'avenir de l'internet santé et sa place dans le système de santé." Technologie Et Sante(44): 71-76.

Anaes (2000). Evaluation clinique de la numérisation en mammographie pour le diagnostic et le dépistage du cancer du sein. Paris ANAES: 71 , 78 tabl., 72 sch.

A la demande de la Direction de l'Hospitalisation et de l'Organisation des Soins, l'ANAES a réalisé une étude d'évaluation technologique intitulée Évaluation clinique de la numérisation en mammographie pour le diagnostic et le dépistage des cancers du sein afin d'examiner les performances diagnostiques des mammographes numériques. Sur la base de l'analyse de la littérature, l'étude conclut que les dernières techniques de numérisation plein champ en mammographie ont des performances diagnostiques équivalentes à celles des techniques conventionnelles.

Anaes (2003). Evaluation des pratiques professionnelles dans les établissements de santé. Dossier du patient : réglementation et recommandations. Saint Denis ANAES: 56.

Ce document est destiné à apporter aux professionnels des établissements de santé un outil d'évaluation de la qualité de la tenue de leurs dossiers à l'aide de la méthode de l'audit clinique. L'audit passe par la sélection de critères pertinents établis à partir de la réglementation et de recommandations. Cette phase indispensable est souvent délicate pour les professionnels. Elle constitue la première partie du document avant que soit abordé l'audit lui-même puis les méthodes d'amélioration utilisables à l'issue de l'audit.

Assyag, P., et al. (2009). "RESICARD: East Paris network for the management of heart failure: absence of effect on mortality and rehospitalization in patients with severe heart failure admitted following severe decompensation." Arch Cardiovasc Dis **102**(1): 29-41.

BACKGROUND: Heart failure presents a major public health problem due to its high prevalence and the increasing number of hospital admissions for this condition. A coordinated healthcare network involving general practitioners and cardiologists was set up in the east of Paris in an effort to improve the management and outcomes of patients with severe heart failure. AIMS: To reinforce patient education, improve compliance with medications and identify symptoms requiring treatment modification. METHODS: In this 'before and after' study, the control group comprised patients hospitalized for severe heart failure who received conventional management in the year preceding the network set-up. The comparative group consisted of patients hospitalized for severe heart failure who underwent network-led care. RESULTS: No significant differences were found between rates of first rehospitalization and all-cause mortality at 1 year between control and network groups, or between rates of first hospitalization due to cardiac causes, time to the first event, duration of hospitalization, rates of cardiac death or time to death. CONCLUSIONS: In this non-randomized study, we found no benefit from management according to the RESICARD healthcare network in terms of mortality or hospitalization in patients with severe chronic heart failure.

Auquier, L. (2000). "Informatisation des données médicales et confidentialité." Bulletin De L'Académie Nationale De Médecine **184**(4): 827-845.

Cet article est le résultat d'une réflexion d'un groupe de travail constitué de médecins appartenant au Conseil National de l'Ordre des Médecins et à l'Académie Nationale de Médecine. Il présente diverses recommandations relatives aux points suivants : - le langage de l'informatique appliqué à l'exercice de la médecine ; - la transmission informatique des données médicales ; - le respect de la confidentialité et du secret médical ; - la délimitation du dossier médical et du carnet de santé.

ATIH (2017). Atlas 2017 des systèmes d'information hospitaliers (SIH) : Etat des lieux des systèmes d'information hospitaliers. Paris DGOS: 144 , tabl., graph.

http://solidarites-sante.gouv.fr/IMG/pdf/dgos_atlas_sih_2017.pdf

La direction générale de l'offre de soins (DGOS) publie chaque année l'atlas des systèmes d'information hospitaliers (SIH) qui rassemble les données principales et tendances de l'évolution des systèmes d'information hospitaliers sur le territoire.

Baratta, N. (2001). "Système d'information de santé : Comment passer à l'ère de l'interconnexion des applications." Décision Sante(174): 18-23.

[BDSP. Notice produite par ENSP u9R0x5tD. Diffusion soumise à autorisation]. Les professionnels de santé sont désormais incités - voire contraints - à s'adonner, bon gré mal gré, aux joies de la télétransmission des FSE, des échanges d'images numériques ou de la communication de données médicales. Pourtant, malgré l'effort des organismes de normalisation pour homogénéiser les protocoles aux plans national et international, malgré la montée en puissance de la carte Vitale, le parc informatique libéral et hospitalier français reste un amas de dispositifs disparates et hétérogènes. Des lacunes dont sont bien conscients les industriels du SNIIS, lesquels avaient organisé, en collaboration avec Décision et Stratégie Santé, un séminaire dans le cadre d'Informedica 2001 sur "l'informatisation des données santé".

Barberousse, P., et al. (2010). "Tic et Territoires. SIH régional : l'expérience de la Franche-Comté." Gestions Hospitalières(495): 206-211.

[BDSP. Notice produite par EHESP 8R0x18Gr. Diffusion soumise à autorisation]. Dans le contexte actuel de réforme du système de gouvernance des systèmes d'information de santé, le développement d'un Système d'Information Hospitalier (SIH) régional semble une piste d'innovation. Cet article présente l'expérience de la Franche-Comté dans la mise en œuvre de son SIH régional. Différentes étapes du projet sont détaillées : projet de mutualisation autour du SIH ; Projet de soutien au développement de processus médicaux et projets de développement du socle d'infrastructure de la plateforme régionale. Un retour d'expérience permet d'apprécier les facteurs clés de succès en ce qui concerne la mutualisation.

Bayat, S., et al. (2008). "Modelling access to renal transplantation waiting list in a French healthcare network using a Bayesian method." Stud Health Technol Inform **136**: 605-610.

Evaluation of adult candidates for kidney transplantation diverges from one centre to another. Our purpose was to assess the suitability of Bayesian method for describing the factors associated to registration on the waiting list in a French healthcare network. We have found no published paper using Bayesian method in this domain. Eight hundred and nine patients starting renal replacement therapy were included in the analysis. The data were extracted from the information system of the healthcare network. We performed conventional statistical analysis and data mining analysis using mainly Bayesian networks. The Bayesian model showed that the probability of registration on the waiting list is associated to age, cardiovascular disease, diabetes, serum albumin level, respiratory disease, physical impairment, follow-up in the department performing transplantation and past history of malignancy. These results are similar to conventional statistical method. The comparison between conventional analysis and data mining analysis showed us the contribution of the data mining method for sorting variables and having a global view of the variables' associations. Moreover these approaches constitute an essential step toward a decisional information system for healthcare networks.

Beffy, M. (2017). "Big data et protection sociale." Revue Française Des Affaires Sociales(4): 1-176.
<https://www.cairn.info/revue-francaise-des-affaires-sociales-2017-4.htm>

Ce dernier numéro de la RFAS pour 2017 comprend exclusivement un dossier consacré au big data et à la protection sociale. Il est composé de cinq articles et de six « points de vue ». Les premiers adoptent des angles variés, soit théoriques (notamment lorsqu'il est question de la protection des données personnelles ou de l'anonymisation) soit pratiques, comme celui qui rend compte de l'utilisation de l'intelligence artificielle dans les traitements du cancer. Le premier « point de vue » fait le point sur big data et statistique publique, les suivants offrent aux lecteurs autant d'exemples d'applications de ces nouvelles techniques de traitement de données « massives » : à la recherche épidémiologique, à l'aide à la décision médicale, à la protection sociale et à la formation professionnelle.

Berard, B. (2017). "La sécurisation du système d'information : Option ou nécessité ?" Gestions Hospitalières(565): 239-242.

[BDSP. Notice produite par EHESP HER0x88r. Diffusion soumise à autorisation]. La plupart des exigences légales et des bonnes pratiques en matière de sécurisation des systèmes d'information trouvent des réponses opérationnelles dans l'ouvrage "Guide d'hygiène informatique" publié par l'Agence nationale de la sécurité des systèmes d'information (Anssi). Sont développés ici des cas concrets d'utilisation des règles déclinées dans les différentes fiches du guide.

Berbain, X. et Minvielle, E. (2001). "L'informatique dans la gestion quotidienne des unités de soins : la barrière de l'apprentissage." Sciences Sociales Et Sante **19**(3): 77-106.

L'informatisation des unités de soins constitue un enjeu affiché pour améliorer l'organisation de la prise en charge des malades. Mais comment se décline cet enjeu dans les faits ? À partir d'une étude de cas réalisée dans quatre unités de soins d'un même hôpital, cette recherche révèle les dysfonctionnements quotidiens qui accompagnent l'introduction de l'informatique dans les collectifs de travail. Ces dysfonctionnements illustrent les défaillances d'une démarche d'apprentissage dont les modalités actuelles reposent pour l'essentiel sur la valeur d'usage que les professionnels de soins prêtent à l'informatique. Une grande partie d'entre eux ont beaucoup de mal à s'abstraire du niveau instrumental de l'outil. L'accès à d'autres niveaux d'apprentissage, gestionnaire et organisationnel, est limitée. En miroir, ces résultats conduisent à définir les conditions d'une introduction plus rationnelle de l'informatique de gestion dans les unités de soins. Cet article est complété par un commentaire critique d'Armand Hatchuel, professeur en gestion de l'Ecole des Mines de Paris (pp. 107-108).

Besselere, R., et al. (2011). "Vingt ans de communication à l'hôpital." Techniques Hospitalières(727): 40-59, graph., ill.

[BDSP. Notice produite par EHESP 8IR0xHlm. Diffusion soumise à autorisation]. Les XIXèmes Journées nationales de l'association des technologies de communication hospitalière Athos se sont déroulées les 7 et 8 octobre 2010 à Saint-Raphaël (83). Ces journées ont été l'occasion de présenter plusieurs expériences et projets mis en place dans des centres hospitaliers. Parmi ces projets : - la sensibilisation de onze établissements de la région Picardie à la sécurité de l'information - la dématérialisation des comptes rendus d'hospitalisation au centre hospitalier universitaire de Rennes - l'intégration de la téléradiologie dans l'activité quotidienne du centre hospitalier du Val-de-Saône Pierre-Vitter à Gray - la mise en place d'une information tactile au lit du patient au CH de Valence - la mise en place d'un réseau wifi multi-applications au sein du pôle mère-enfant du groupe hospitalier du Havre. D'autres thèmes ont été également abordés durant ces journées : l'évolution des technologies au service des soignants, du minitel à l'application web, a été évoquée ainsi que les finalités et enjeux de la géo-santé ou "système d'information géographique" (SIG).

Bossi, J. (2013). "Secteur médico-social et systèmes d'information. Les enjeux." Revue Hospitalière De France(550): 16-17.

[BDSP. Notice produite par EHESP R0xoBnCp. Diffusion soumise à autorisation]. Alors que la coordination des acteurs sanitaire et médico-sociaux apparaît indispensable à une qualité de prise en charge globale de la personne et conduit à l'émergence de nouveaux modes d'exercice au sein de maisons, centres et réseaux de santé, de nombreux freins de diverses natures limitent encore cette coordination : outils de messagerie rarement sécurisés, dossiers patients informatisés non interopérables, etc.

Bourquard, K. (2007). "Dossier médical partagé ou personnel : situation internationale." Pratiques Et Organisation Des Soins **38**(1): 55-67.
http://www.ameli.fr/fileadmin/user_upload/documents/Dossier_medical_situation_internationale.pdf

[BDSP. Notice produite par CNAMTS mhR0x9Fm. Diffusion soumise à autorisation]. Afin d'apporter un éclairage international aux questions posées en France par la mise en œuvre du DMP, l'auteur a analysé les aspects d'organisation du territoire, de stratégie, de conduite du changement et de cadre technique. Les pays abordés sont les états européens, les États-Unis et le Canada, l'Australie et le Japon.

Brion, P. (2000). "Une stratégie gagnante de mise en place d'un dossier de soins informatisé." Gestions Hospitalières(392): 33-36.

[BDSP. Notice produite par ENSP QJBmeR0x. Diffusion soumise à autorisation]. En 1992, la mise en place d'un dossier de soins individualisé et complet à l'hôpital Fernand-Widal (AP-HP) paraissait une mission presque impossible. Aujourd'hui tout semble avoir été très simple. Pourquoi cet écart ? Nous insisterons ici sur la stratégie de mise en place et sur les différents éléments du dossier de soins en laissant volontairement de côté les aspects qualitatifs et quantitatifs des résultats obtenus ainsi que leur interprétation.

Brouchet, J., et al. (2005). "Dossier médical personnel : du projet à la réalité. Numéro spécial." Bulletin De L'ordre Des Médecins(3): 3-16.

[BDSP. Notice produite par ORSIF mMJpR0xh. Diffusion soumise à autorisation]. Deux nouvelles lois structurent l'avenir du système de santé français : la loi de santé publique du 9 août 2004 et la loi relative à l'Assurance maladie du 13 août 2004. Un nouvel équilibre est maintenant à construire entre des forces issues de la volonté de planification et la dynamique du marché. Ce numéro spécial du Bulletin de l'Ordre des Médecins est consacré au "Dossier médical personnel" et doit permettre de coordonner la trajectoire de soins du malade par le médecin traitant, et en particulier le suivi du malade et de la maladie chronique. Différents aspects du sujet sont abordés par des articles tels que : - les enjeux du dossier médical personnel - la confidentialité, condition sine qua non - peut-il exister un "droit à l'oubli" ? - comment les données de santé sont-elles conservées ? - sur le terrain : - à l'hôpital européen Georges Pompidou - Addica, un réseau en Champagne-Ardenne - l'expérimentation de la Mayenne - le contexte européen : et demain, un dossier médical européen ? En plus de ces articles,

des petits entretiens, points de vue et commentaires sont donnés par divers médecins ou personnes du milieu médical.

Brudieu, E., et al. (2005). "Place de l'informatisation du circuit du médicament dans la stratégie de lutte contre l'iatrogénie médicamenteuse : expérience du CHU de Grenoble." Techniques Hospitalières(690): 38-45, ill.

[BDSP. Notice produite par ENSP R0x88XPU. Diffusion soumise à autorisation]. Le CHU de Grenoble s'est engagé depuis 1994 dans une démarche de sécurisation du circuit du médicament s'appuyant sur son informatisation. Outre le respect du cadre réglementaire, cette démarche permet de limiter l'iatrogénie par l'optimisation de la circulation de l'information entre les différents acteurs de soins et par une "réappropriation de tâche" pour les trois acteurs majeurs de ce circuit que sont le médecin, le soignant et le pharmacien.

Burg, S., et al. (2005). "Informatisation de l'acquisition et de l'archivage des images d'échographie : intérêt économique et organisationnel." Techniques Hospitalières(690): 66-69.

[BDSP. Notice produite par ENSP HRFegR0x. Diffusion soumise à autorisation]. Cet article nous présente la mise en place d'un système informatisé d'acquisition, de sauvegarde et d'impression d'images d'échographies (vidéos et images statiques) par le service de médecine nucléaire du CHU de Poitiers. La solution technique adoptée a permis de libérer un équivalent temps plein personnel et de réaliser des économies substantielles au niveau des consommables.

Buxeraud, J., et al. (2000). Informatique et internet à l'officine, Paris : Elsevier

Réalisé avec le concours de Celtipharm.com, ce répertoire présente les principaux sites de santé et les perspectives offertes aux pharmaciens sur le net, selon une présentation thématique : sites portail, sites institutionnels et universitaires, sites dédiés aux médicaments, sites éditeurs et périodiques en ligne, sites de l'industrie pharmaceutique, sites des répartiteurs.

Caillol, H. (2015). "Ouverture des données de santé : l'expérience de l'Assurance maladie." Informations Sociales(191): 60-67.

[BDSP. Notice produite par APHPDOC mR0xmqaO. Diffusion soumise à autorisation]. L'Assurance maladie met à disposition des données ouvertes sur les professionnels de santé et les assurés, qui présentent un fort potentiel. L'objectif est d'élargir le périmètre des données centralisées et celui des destinataires tout en garantissant la protection des données individuelles. Réalisée progressivement, l'ouverture s'est appuyée sur un accompagnement des utilisateurs qui a évolué vers la coopération et le partenariat. (R.A.).

Cnam (2019). 5 millions de personnes ont ouvert leur DMP, Paris : Cnam

Plus de 5 millions de dossiers médicaux partagés (DMP) ont déjà été ouverts, a indiqué l'Assurance maladie, en rapportant un rythme de 100.300 ouvertures par semaine. L'Ile-de-France arrive en tête avec plus de 739.000 DMP créés, devant les Hauts-de-France (587.000), la région Grand-Est (538.000), l'Occitanie (485.000) et Auvergne-Rhône-Alpes (465.000). Ces dossiers sont immédiatement enrichis de 2 ans d'historique des remboursements, puis les soignants sont invités à le remplir au fil de l'eau. Les médecins semblent cependant assez peu impliqués dans leur création. Sur les quatre canaux d'ouverture proposés aux patients, celui qui consiste à profiter d'une consultation auprès d'un professionnel de santé arrive dernier avec 18 % du total des DMP ouverts. À l'inverse, les pharmaciens font figure de bons élèves (31 %), juste derrière les agents de l'Assurance maladie (32 %) et les usagers eux-mêmes (19 %). Selon la Cnam, près de 6,5 millions de documents ont en outre été ajoutés à ces dossiers, en plus des 57,3 millions d'historiques des soins qu'elle y verse elle-même. Mais là encore, les médecins libéraux sont peu à mettre la main à la pâte. Seuls 14% de ces documents ont été ajoutés par les professionnels de santé libéraux contre 54% par les établissements de santé, 30% par les patients eux-mêmes et 2% par les centres de santé. Par ailleurs, 19 CHU (sur 32) alimentent automatiquement les DMP.

➤ Actualisation au 14 juin 2019 : 6 millions de DMP ouvert.

Carrier, N., et al. (2004). "Banque de données hospitalières de France : module médico-pharmaceutique - Exercice 2002. Activité et dépense médicales : un outil d'analyse et de comparaison." Revue Hospitalière De France(497): 58-63.

[BDSP. Notice produite par ENSP THHsRR0x. Diffusion soumise à autorisation]. La démarche engagée par une centaine d'établissements publics participant à l'échantillon du module médico-pharmaceutique constitue un observatoire original de la dépense médicale hospitalière, permettant à ses adhérents de se comparer entre eux et d'analyser leur propre évolution. Les données présentées par l'équipe BDHF de la Fédération hospitalière de France permettent de comparer les pratiques, et donc de sensibiliser et responsabiliser les ordonnateurs de la dépense médicale que sont les prescripteurs.

Cartau, C. (2014). Stratégies du système d'information vers l'hôpital numérique, Rennes : Presses de l'EHESP

[BDSP. Notice produite par EHESP sqlR0xFj. Diffusion soumise à autorisation]. Les établissements de santé n'échapperont pas à la marche vers la numérisation et l'informatisation massive qui a déjà touché les autres secteurs économiques. Si certains domaines sont informatisés depuis de nombreuses années (laboratoires, imagerie) dans d'autres (prescription connectée, télé-imagerie régionale), il s'agit pour nombre d'établissements d'une véritable révolution qui suscite craintes et espoirs. Complément indispensable des deux manuels précédents (Guide pratique du système d'information et La sécurité du système d'information des établissements de santé), ce guide, à l'intention des managers, propose cette fois des outils concrets permettant de mesurer les enjeux de ce tournant numérique et de mieux évaluer l'impact des stratégies adoptées. Qu'il soit décideur, professionnel de l'informatique ou cadre de santé, le lecteur tirera profit de l'approche globale et systématique proposée ici : la notion d'hôpital numérique n'est pas seulement abordée sous l'angle technique mais mise en perspective par rapport aux véritables enjeux du monde de la santé.

Cauhape, J. et Raveneau, V. (2008). "Mise en place d'un Système Décisionnel Informatisé : vers un outil de pilotage commun aux pôles d'activité et à la direction." Journal D'Economie Médicale **26**(1-2): 79-90, fig.

[BDSP. Notice produite par ORSRA 7R0xtqJj. Diffusion soumise à autorisation]. La mise en place, au CHI Elbeuf Louviers, d'un Système Décisionnel Informatisé, a été validée dans le projet d'établissement 2006-2011. Cette communication fait le point sur les étapes mises en œuvre fin 2007, sur les raisons du succès et les écueils à éviter.

Coignard, B., et al. (2011). "e-SIN : un nouvel outil au service du signalement des infections nosocomiales." Bulletin Épidémiologique Hebdomadaire(15-16-17): 204-
<http://invs.santepubliquefrance.fr/Publications-et-outils/BEH-Bulletin-epidemiologique-hebdomadaire/Archives/2011/BEH-15-16-17-2011>

Colin, C., et al. (2007). "Le dossier médical personnel." Actualité Et Dossier En Sante Publique(58): 17-56.

[BDSP. Notice produite par ENSP 0F8W4R0x. Diffusion soumise à autorisation]. Ce dossier réunit en quelques pages tout ce que le système de santé français porte comme espoir : une meilleure vie pour tous, et comme contraintes : l'ensemble mal arrangé de systémiques stratifiées et de comportements individuels divergents, qui surprend plus d'un observateur extérieur. Gageons que la constance avec laquelle sont appliquées les réformes dans le système de santé nous conduise au progrès sanitaire et social.

Cordier, M. (2009). "Enquête " Changements organisationnels et informatisation " dans le secteur de la santé COI-H." Série Sources Et Méthodes - Document De Travail - Drees(8): 29 , tabl., fig., ann.
<http://www.drees.sante.gouv.fr/IMG/pdf/seriesource-method08.pdf>

Les hôpitaux ont connu, à l'instar des entreprises du secteur marchand, des changements de grande ampleur tant sur le plan de leur organisation, que des outils informatiques utilisés : utilisation de systèmes d'information médicalisés, traçabilité des actes réalisés, certification, etc. Ces changements

doivent pouvoir être appréciés, de manière conjointe, du point de vue des directions hôpitaux et de cliniques qui les mettent en œuvre, et du point de vue des agents. L'enquête « COI-H » réalisée par la Direction de la recherche, des études, de l'évaluation et des statistiques (Drees) en collaboration avec le Centre d'études de l'emploi (CEE) est l'extension dans le secteur hospitalier du dispositif d'enquête « COI » 2006. Il s'agit d'une première dans le secteur de la santé, qui a nécessité une adaptation importante du questionnaire du volet « employeurs » pour correspondre aux situations rencontrées par les établissements de santé. Ce travail a été mené sur la base d'entretiens approfondis auprès d'une vingtaine de directeurs et responsables de structures hospitalières et a fait l'objet d'une large concertation au sein du ministère de la santé. Ce document présente la démarche, les traitements et les résultats de l'enquête.

Coudreau, D. (2006). "Hébergeur de données médicales, un nouvel acteur de la régulation des soins." Sève : Les Tribunes De La Santé(10): 51-57.

Cet article s'appuie sur l'opération de mise en place du dossier médical personnel (DMP) et ses conditions de réalisation pour illustrer concrètement la fonction " d'hébergement de données de santé à caractère personnel ". Après avoir décrit le cadre juridique strict qui entoure la qualité d'hébergeur de données, il examine le rôle qui leur est attribué dans la montée en charge du DMP, avant de s'interroger sur la mise en place que ces nouveaux venus pourraient être amenés à occuper dans le paysage, au demeurant encombré, de tous ceux qui entendent jouer un rôle dans la régulation du système de soins français (d'après l'introduction de l'auteur).

Coudreau, D., et al. (2007). "Dossier médical personnel : vers un partage de l'information." Regards De La Fhp(48): 17-41.

[BDSP. Notice produite par EHESP 7B8D8R0x. Diffusion soumise à autorisation]. Malgré les retards pris pour sa généralisation, le projet "Dossier Médical Personnel" apparaît comme étant le plus important chantier relatif aux Systèmes d'Information de Santé que le pays ait jamais entrepris. Les larges concertations organisées par le GIP-DMP ainsi que le bilan des expérimentations qui se sont déroulées en 2006 ont été riches d'enseignement pour la future phase de généralisation. Cependant à ce jour, le cadre législatif n'est pas encore définitivement établi et certains aspects techniques restent en cours de discussion, notamment au niveau des échanges d'informations entre les établissements de santé et le DMP. La FHP a souhaité recueillir les témoignages de différents intervenants afin d'apporter un nouvel éclairage dans la façon d'appréhender la généralisation du DMP. Ces éléments peuvent également alimenter la réflexion des cliniques privées sur les orientations à donner pour le développement de leur Système d'Information Hospitalier.

Couray, T. et al. (2001). "Les données du PMSI à visée stratégique : méthodes de segmentation." Journal D'Economie Médicale 19(7-8): 463-471, rés., tabl.

[BDSP. Notice produite par ORSRA 7JR0XTFO. Diffusion soumise à autorisation]. Dans le cadre du PMSI, en sus des traditionnels casemix par GHM, deux grandes catégories d'outils d'analyse d'activité ont été développés en France ces dernières années. La première catégorie englobe les méthodes utilisant les regroupements de GHM, le plus souvent élaborés dans le cadre des Comités Techniques régionaux d'information médicale : les groupes fonctionnels et les groupes d'activité, les G-GHM, les OAP. La seconde catégorie comprend des méthodes développées au niveau local dans un objectif d'amélioration de la description des prises en charge hospitalières, ce sont le plus souvent des segments de diagnostics et/ou d'actes. L'objectif de ce travail est double : d'une part, présenter ces différentes méthodes et d'autre part, en discuter les limites respectives. (R.A.).

Courbis, T. (2010). "Tic et Hôpital. Le design organisationnel." Gestions Hospitalières(495): 239-240.

[BDSP. Notice produite par EHESP jH888R0x. Diffusion soumise à autorisation]. Pour maîtriser les coûts de santé tout en offrant les soins les plus efficaces, les technologies de l'information et de la communication (TIC) doivent désormais être associées aux autres technologies hospitalières. Il devient ainsi indispensable de concevoir l'intégration du "tout numérique" dès les phases architecturales d'une construction ou reconstruction hospitalière. Pour atteindre cet objectif, il faut réinventer

l'hôpital, ses organisations et ses murs autour des technologies. Nous appellerons "design organisationnel" l'une des étapes essentielles de la réussite d'un projet novateur. (R.A.).

Couvreur, C. (2010). "Projet de dossier médical personnel et cadre national d'interopérabilité." Revue Hospitalière De France(536): 60-62.

[BDSP. Notice produite par EHESP tIR0xB9p. Diffusion soumise à autorisation]. Le cadre d'interopérabilité des systèmes d'information de santé (CI-SIS) a été mis en place en octobre 2009 par l'Agence nationale des systèmes d'information partagés de santé (ASIP Santé). Le projet de dossier médical personnel, sur lequel travaille l'ASIP santé depuis plusieurs mois, intègre aujourd'hui les principes du CI-SIS. Cette intégration permet de préciser les conditions de sa mise en œuvre, la responsabilité des acteurs et ses modalités d'accès par les hospitaliers.

Crespel, A. et Gelisse, P. (2008). "[Healthcare networks in the Languedoc-Roussillon region]." Neurochirurgie **54**(3): 475-478.

Epilepsies Languedoc-Roussillon, a healthcare network in epileptology, was created in 1994 with all practitioners interested in epileptology in this region of southern France. This network is autonomous, receives no subsidies and works within the existing healthcare system. It proposes best practices for epilepsy management from diagnosis to epilepsy surgery and continuing education. This network provides patients with rapid accessibility to management of their epilepsy. In this paper, the history of this network in southern France, its organization, actions and goals are discussed.

De Block, M. (2016). "MY GHT : Portail collaboratif patients/professionnels du bassin aubois." Revue Hospitalière De France(569): 54-55, fig.

[BDSP. Notice produite par EHESP C8HpR0x9. Diffusion soumise à autorisation]. Présentation du projet OPTIMIPSTIC (OPTIMisation du Parcours de Soins par les Technologies de l'Information et de la Communication) mis en œuvre aux Hôpitaux Champagne Sud. Le projet a pour fer de lance un portail ville-hôpital ouvert en 2016 : le portail sécurité My GHT. Déjà actif pour les échanges pharmaceutiques aux patients et professionnels de santé, ce portail couvrira progressivement les activités médicales et paramédicales.

De Montalembert, P. (2010). "Systèmes d'information hospitaliers. Pas seulement un problème informatique." Gestions Hospitalières(500): 591-594.

[BDSP. Notice produite par EHESP m9R0xpsA. Diffusion soumise à autorisation]. Notre revue ne s'est pas d'emblée intéressée aux systèmes d'information hospitaliers (SIH) : en 1960, le thème paraît encore trop difficilement cernable et les utilisations de l'informatique, certes déjà prometteuses, ne sont pas assez fiables pour pouvoir faire l'objet d'analyses régulières. Les SIH ont ainsi d'abord vécu une sorte de "préhistoire", une histoire floue.

Degoulet, P. et Fagon, J.-Y. (2004). "L'hôpital communicant (1ère partie) - Stratégies de mise en œuvre des systèmes d'information cliniques." Gestions Hospitalières(441): 793-800, graph., tabl.

[BDSP. Notice produite par ENSP R0xT3XR5. Diffusion soumise à autorisation]. Après un bref rappel historique du développement des systèmes d'informations cliniques, les auteurs passent en revue plusieurs dimensions stratégiques de leur mise en œuvre. Ils exposent les bénéfices d'une approche "horizontale" de l'informatique organisée autour des processus de soins par comparaison aux risques des systèmes "verticaux" organisés autour des disciplines médicales ou des métiers. À partir de l'expérience de l'hôpital européen Georges Pompidou, ils prônent une stratégie de déploiement globale, par paliers successifs, par opposition à l'approche parcellaire autour d'unités pilotes. Ils soulignent enfin le rôle clé de la maîtrise d'ouvrage et le besoin de réappropriation par les décideurs et les utilisateurs de solutions trop souvent dictées par la recherche de la toute dernière technologie informatique.

Delle-Vergini, N., et al. (2000). "Le dossier du patient et l'organisation des soins." Gestions Hospitalières(392): 13-52.

[BDSP. Notice produite par ENSP rR0xBNfx. Diffusion soumise à autorisation]. Dans ce dossier les articles suivants sont développés : La gestion prévisionnelle des soins GPS, le protocole de soins : méthodes et stratégies ? l'anonymat des informations médicales existe-t-il ? du dossier de soins papier au dossier patient informatisé, une stratégie gagnante de mise en place d'un dossier de soins informatisé, l'évaluation des apports de l'informatisation des dossiers de soins, le dossier du patient en établissement psychiatrique, l'actualité de la coopération hospitalière en matière de soins.

Delplanque, S. (2017). "Système d'information et GHT. Une chance pour les parcours de soins ?" Revue Hospitalière De France(574): 20-24, fig.

[BDSP. Notice produite par EHESP 8opHR0xm. Diffusion soumise à autorisation]. Le groupement hospitalier de territoire est un acteur de la prise en charge globale, structurée et continue des patients. Son système d'information est appelé à répondre aux besoins de communication et d'échange au sein du groupement mais aussi avec l'ensemble des acteurs du territoire de santé : médecine de ville, structures médico-sociales et sociales. Au regard des textes existants et du programme "Territoire de soins numérique", la mise en œuvre d'une plateforme d'échange et de partage de données intra et inter GHT apparaît donc opportune et permettra d'informatiser non plus la production de soins mais un parcours de soins.

Detournay, B., et al. (2017). "Accès aux données de santé." Lettre Du Collège (La)(2): 24.
http://www.ces-asso.org/sites/default/files/lettre_du_collège_ndeg_2-2017_0.pdf

La 11e matinée thématique du Collège des Économistes de la Santé a permis d'aborder la question de l'accès aux données de santé et réuni des acteurs essentiels sur ce thème qu'il s'agisse d'institutionnels (DREES, CNAMTS, INDS, INSERM, AP-HP) ou d'acteurs privés (LEEM, Healthcare Data Institute). Le futur Système national des données de santé (SNDS) créé par la loi de modernisation du système de santé du 26 janvier 2016 est en cours de mise en place. Un ensemble de décrets ont été publiés récemment qui commence à dessiner ce que pourra être ce SNDS dans son contenu, ses modalités de structuration et ses conditions d'accès au moins pour ce qui est des acteurs publics. Ce fascicule rassemble les différentes contributions des intervenants présentant ce nouveau système national des données de santé (SNDS).

Devillier, N. (2017). "Chapitre 6. Les dispositions de la loi de modernisation de notre système de santé relatives aux données de santé." Journal International de Bioéthique **28**(3): 57-61.
<https://www.cairn.info/revue-journal-international-de-bioethique-2017-3-page-57.htm>

La loi sur la modernisation de notre système de santé adoptée en 2016 étend le champ du secret médical en créant le dossier médical partagé (DMP) du patient. Tous les professionnels de santé intervenant dans le parcours de soin ont accès aux informations qui y sont renseignées. Le patient y accède par un site Internet dédié. Les décrets d'application de ce dispositif fixent les modalités de ce partage et encadrent la création de ce traitement automatisé de données à caractère personnel. Enfin, la loi crée un accès ouvert et sécurisé aux données de santé dans l'intérêt de la collectivité. Cet open data en santé est placé sous la gouvernance de l'Institut national des données de santé.

Dourgnon, P., et al. (2000). "Apport de l'informatique dans la pratique médicale. Premiers résultats d'un enquête inédite via internet." Questions D'Economie De La Santé (Credes)(26): 6 , 3 graph., 1 enc.
<http://www.irdes.fr/Publications/Qes/Qes26.pdf>

Le Comité de Gestion du Fonds de Réorientation et de Modernisation de la Médecine Libérale (F.O.R.M.M.E.L.) avec le concours du Conseil Supérieur des Systèmes d'Information de Santé (C.S.S.I.S.) et du Centre de Recherche d'Etude et de Documentation en Economie de la Santé (C.R.E.D.E.S.) a mis en place une étude sur l'apport de l'informatique dans la pratique médicale libérale. Ce fascicule présente les premiers résultats de cette enquête qui a été conduite à partir de l'expérience quotidienne de médecins volontaires. Ces résultats permettent de connaître l'utilisation

effective de l'informatique par les médecins, d'orienter leur choix parmi les possibilités actuelles et aussi d'inciter les industriels à proposer des services plus accessibles et mieux adaptés.

Duhamel, S., et al. (2016). "Nouveaux projets d'organisation professionnelles : l'ambulatoire demain ?" Médecine : De La Médecine Factuelle a Nos Pratiques **12**(1): 26-28.

Les médecins généralistes ont été confrontés dès 1996 aux changements technologiques touchant leur pratique dans le cadre de l'informatisation du système de santé. L'avènement d'un dossier médical informatisé a permis la télétransmission, contrainte par le système conventionnel. Le Dossier Médical Partagé (DMP) n'a pas connu le succès escompté. Les déploiements de ces deux évolutions sont nés d'expérimentations et de sites pilotes. Si des messageries sécurisées deviennent opérationnelles aujourd'hui, la simplicité n'est pas au rendez-vous, le service au patient peu visible.

Duhot, D., et al. (2009). "L'Observatoire de la Médecine Générale. Un réseau et une base de données au service de la médecine générale en France." Primary Care **9**(2): 41-45, tabl.

Développé pas à pas depuis 15 ans, le réseau de la Société Française de Médecine Générale (SFMG) rassemble près de 600 médecins généralistes dont le quart dispose, à ce jour, des outils informatiques permettant d'alimenter la base de données de l'Observatoire. Les informations concernant les prises en charge de près de 700 000 patients sur la période 1993-2008 sont à la disposition de la recherche médicale et médicoéconomique, en France et à l'international, mais aussi de la formation médicale initiale et continue. Cet outil est au service de tous, en particulier par l'intermédiaire de son site Internet, accessible gratuitement (<http://omg.sfm.org>).

Dupuy, O. (2005). La gestion des informations relatives au patient : dossier médical et dossier médical personnel, Bordeaux : Les Etudes hospitalières
<http://www.etudes-hospitalieres.fr/edition/?p=117&som=1>

Les règles qui régissent la gestion des dossiers médicaux diffèrent selon qu'elles s'appliquent à l'exercice au sein de structures hospitalières ou, au contraire, à la médecine individuelle. Ce cadre juridique hétérogène est le révélateur d'une prise en charge cloisonnée des patients. La loi du 4 mars 2002, relative aux droits des malades, n'a pas apporté de réelle réponse à ce sujet. Les progrès des technologies de l'information permettent désormais d'envisager la réforme des modes de gestion des données de santé. La création d'un dossier médical personnel (DMP) constitue une étape majeure dans la démarche de coordination des soins. Parce qu'il doit permettre à tout professionnel de santé intervenant dans le processus de soins d'accéder à tout moment, y compris en urgence, à l'ensemble des informations pertinentes concernant le patient qu'il prend en charge, le DMP entrouvre la voie à une gestion centrée sur le patient. L'auteur, Olivier Dupuy, docteur en droit, propose une étude objective et argumentée des règles juridiques qui régissent la gestion des données de santé. La clarté du propos permet au lecteur, usager comme professionnel de santé, de bénéficier d'une information précise et intelligible sur le sujet.

Durand, J. P., et al. (2005). "Dossier médical personnel." Médecin Radiologue De France (Le)(274): 5-42.

Ebele, F. (2011). "Synergie et mutualisation en informatique de santé hospitalière. Une stratégie d'établissement (s)." Revue Hospitalière De France(539): 82-88, graph.

[BDSP. Notice produite par EHESP CtR0xI8G. Diffusion soumise à autorisation]. Le centre hospitalier de Rouffach (Haut-Rhin) a initié dès 2000 la mutualisation en matière de gestion des systèmes d'information hospitaliers et médico-sociaux. La certification intégrée ISO 9001-ISO 20000 obtenue en décembre 2009 par la direction des systèmes d'information du centre hospitalier, et son intégration le 1er janvier 2011 au groupement d'intérêt public Sym@ris ouvrent de nouvelles perspectives. L'article présente cette expérience innovante et donne la place à six témoignages.

Ebele, F. et Trouche, J. (2000). "Du dossier de soins papier au dossier médical informatisé." Gestions Hospitalières(392): 26-32, graph.

[BDSP. Notice produite par ENSP A4dLR0xC. Diffusion soumise à autorisation]. Au début des années 80, l'évolution des soins infirmiers a amené les équipes infirmières du centre hospitalier de Rouffach à préciser leur conception des soins, à réfléchir à leur pratique et à restructurer l'organisation des soins. Ainsi sous l'impulsion de Serge Gaubert, directeur du service de soins infirmiers, une véritable politique du service infirmier a été menée. Elle englobe l'organisation, les moyens, les outils, les références théoriques, la formation, avec pour objectif de promouvoir des soins de qualité. Le dossier de soins a été progressivement mis en place dans les unités de soins de l'établissement entre 1983 et 1987. Durant la même période, un groupe de soignants a élaboré un outil d'évaluation de la charge de travail intitulé "Evaluation des besoins en soins infirmiers (EBSI)" à partir des soins requis par patient en se référant au PRN 80. L'ensemble des soins infirmiers dispensés a été recensé, décrit, codifié, quantifié et une évaluation mensuelle de la charge de travail est réalisée depuis 1986. En 1995, l'équipe du service informatique a réalisé, avec un groupe de soignants de l'établissement, l'analyse des données destinées à préparer l'informatisation du dossier de soins. Cette analyse s'inscrit dans le cadre plus général du système d'information hospitalier avec pour objectif de créer un logiciel traitant du "dossier médical du patient". Celui-ci intègre toutes les facettes de l'activité liée à l'hospitalisation du patient.

EN3S (2011). "L'informatique au service de la Sécurité sociale." Regards(40): 238.

Ce fascicule aborde l'informatique au service de la Sécurité sociale sous les angles suivants : informatique et offre de services, informatique et efficacité, informatique et contrôles.

Falaise-Mirat, B., et al. (2010). "Tic et Hôpital. Tic et performance des organisations de santé." Gestions Hospitalières(495): 245-249.

[BDSP. Notice produite par EHESP R0xponrC. Diffusion soumise à autorisation]. La performance des organisations de santé-définie par la qualité du service rendu à la population, la réactivité des organisations et l'équité des financements-dépend largement de la capacité à mesurer, suivre et piloter le système. Pour ce faire, les technologies de l'information et de la communication (TIC) en sont l'instrument privilégié, disposant de plus d'un potentiel majeur pour appuyer la transformation du système de santé. Néanmoins, malgré son impact démontré sur la qualité des soins et l'accessibilité, ce levier reste peu utilisé, sans doute à cause de la difficulté à appréhender la portée économique des investissements dans les TIC, en particulier la complexité de la répartition des gains engendrés. La condition préalable à l'apparition de ces gains est de sécuriser les projets de systèmes d'information, par leur cadrage, la mise en œuvre de bonnes pratiques de gouvernance et la mise en place d'une communication permettant de développer l'usage des technologies implantées. RA.

FIQS (2012). Fonds d'intervention pour la qualité et la coordination des soins (FIQCS). Rapport d'activité 2011. Paris : Fonds d'Intervention pour la Qualité et la Coordination des Soins.: 77 , tabl., fig.

Ce rapport retrace dans une première partie les éléments d'analyse de l'activité générale du Fonds d'intervention pour la qualité et la coordination des soins (FIQCS), puis il reprend chacune des thématiques financées par le FIQCS. Enfin, il présente des fiches exposant, par région, l'implantation des structures financées par le FIQCS eu égard à l'offre de soins locale. L'autorisation de dépenses 2011 du FIQCS a été fixée à 266 millions d'euros. Le taux de consommation des crédits a été de 98 %. La nature des actions financées par le FIQCS est très stable, avec un financement principalement consacré au niveau national, au DMP (17 % des dépenses globales du FIQCS) et au niveau régional aux réseaux de santé (64 % des dépenses globales) et à la permanence des soins ambulatoire (7 % des dépenses globales). Le FIQCS a également permis aux ARS de soutenir des actions favorisant la coordination des soins en ville, par un financement accru de projets d'exercice regroupé, de nouveaux modes d'exercice et d'actions de télémédecine ou sur les systèmes d'information.

➤ Voir sur [Ameli](#) le dossier sur le FIQS

Fortune, F. (2011). "Sécurité des données informatiques : trois étapes nécessaires." Techniques Hospitalières(725): 29-30.

[BDSP. Notice produite par EHESP ADR0x8o9. Diffusion soumise à autorisation]. Afin de diminuer les atteintes à la sécurité des données confidentielles des patients, il est important de mettre en place une stratégie globale de sécurité dépassant le cadre de la conformité. Cet article présente brièvement les trois étapes nécessaires pour la mise en place d'une telle stratégie.

Fouillet, A., et al. (2012). "La certification électronique des décès, France, 2007-2011." Bulletin Épidémiologique Hebdomadaire(1): 7-10.

<http://invs.santepubliquefrance.fr/Publications-et-outils/BEH-Bulletin-epidemiologique-hebdomadaire/Archives/2012/BEH-n-1-2012>

[BDSP. Notice produite par InVS 8rnR0xqH. Diffusion soumise à autorisation]. Introduction - Depuis 2007, un nouveau mode de certification des décès par voie électronique est à la disposition des médecins. Cette étude constitue la première analyse épidémiologique des données collectées par ce système. Méthodes - La progression du déploiement de la certification électronique a été évaluée de janvier 2007 à septembre 2011. Une analyse comparative des décès par âge, sexe, département et par cause médicale de décès selon le mode de certification (papier/électronique) a été menée sur l'année 2010. L'utilisation des données pour la surveillance sanitaire en temps réel est illustrée à travers l'exemple de la grippe. Résultats - En juin 2011, près de 5% de la mortalité nationale était certifiée électroniquement, avec une répartition hétérogène par département. Quarante-vingt-quatre pour cent (84%) des certificats électroniques étaient enregistrés à l'hôpital (vs. 48% sur certificat papier). Les décès des personnes âgées de plus de 85 ans étaient les moins fréquemment certifiés par voie électronique. Quarante-vingt-dix pour cent (90%) des décès étaient certifiés dans le jour suivant le décès. Conclusion - Accessibles aux épidémiologistes quelques heures après le décès, les données issues de la certification électronique constituent une amélioration considérable pour la surveillance sanitaire. Toutefois, l'utilisation de ce système pour une surveillance fiable à un niveau national impose une forte participation des établissements de santé. (R.A.).

Fournereau, F. et Gadenne, A. (2018). "La dématérialisation en marche : Vers la troisième ère des systèmes d'information en santé." Gestions Hospitalières(575): 247-249, fig.

[BDSP. Notice produite par EHESP J8R0x89q. Diffusion soumise à autorisation]. Mis en œuvre dans le monde industriel et des services, la dématérialisation a fait irruption dans le monde hospitalier avec l'obligation réglementaire imposée par le ministère des Finances pour la gestion des flux entre ordonnateurs et comptables publics (flux PES V2, signature électronique, dématérialisation des pièces justificatives), mais aussi la dématérialisation du dossier patient. (R.A.).

Fournereau, F., et al. (2017). "Maîtriser son SI lors de la transformation numérique." Gestions Hospitalières(565): 246-248, fig.

[BDSP. Notice produite par EHESP 7oR0x9Ck. Diffusion soumise à autorisation]. Les systèmes d'information de santé connaissent aujourd'hui une transformation numérique inévitable. Dans le même temps, la protection des données, leur disponibilité conduisent à repenser les enjeux de l'informatisation pour garantir la prise en charge des patients. Le GIP SILPC met à disposition de ses adhérents une plateforme complète de dématérialisation et accompagne les établissements adhérents dans la mise en place d'une gestion centralisée des identités et des authentifications fortes.

Fournereau, F. et Gadenne, A. (2016). "La dématérialisation en marche : vers la troisième ère des systèmes d'information en santé." Gestions Hospitalières(555): 205-207, fig.

[BDSP. Notice produite par EHESP sqR0x8pp. Diffusion soumise à autorisation]. Mise en œuvre dans le monde industriel et des services, la dématérialisation a fait irruption dans le monde hospitalier avec l'obligation réglementaire imposée par le ministère des Finances pour la gestion des flux entre ordonnateurs et comptables publics - flux PES V2, signature électronique, dématérialisation des pièces justificatives. (introd.).

Gallois, F. et Raully, A. (2016). "De la caractérisation à la comparaison des systèmes de télémédecine : implications méthodologiques." Journal De Gestion Et D'Economie Médicales **34**(1): 87-105, tabl., graph.

[BDSP. Notice produite par ORSRA qR0xlqjA. Diffusion soumise à autorisation]. La télémédecine en tant que pratique de la médecine à distance, via les technologies de l'information et de la communication, est plébiscitée par les organisations de coopération internationale que sont l'OMS et l'OCDE. La télémédecine est alors présentée comme un moyen d'améliorer l'efficacité et la performance des systèmes de santé de leurs pays membres, indépendamment de la configuration du système. Pourtant, aucun de ces organismes ne caractérise précisément la télémédecine au regard de la place qu'elle occupe au sein du système de santé. Nous proposons de présenter une méthodologie de caractérisation d'un système de télémédecine, à même de mettre en relation production de télémédecine et configuration institutionnelle, en vue de soutenir une comparaison internationale.

Gerbod, D. (2004). "L'hôpital communicant (1ère partie) - L'approche sectorielle santé. Facteur de convergence de la technologie et des logiciels." *Gestions Hospitalières*(441): 801-802.

[BDSP. Notice produite par ENSP PG01DR0x. Diffusion soumise à autorisation]. Si les logiciels de gestion intégrés - ou Enterprise Resource Planning (ERP) - se sont imposés dans le secteur industriel, leur diffusion dans les autres secteurs, et en particulier le secteur public, n'est pas aussi évidente.

Gervais, J.-B., et al. (2007). "Système d'informations hospitaliers. Dossier." *Décision Santé*(239): 8-13.

[BDSP. Notice produite par ENSP LW6OR0xO. Diffusion soumise à autorisation]. En matière de SIH, les Etats-Unis font figure de modèle étonnant. Les chiffres parlent d'eux-mêmes : alors que les hôpitaux publics français ne consacraient qu'1,8% de leur budget aux SIH, les hôpitaux américains, eux, consacraient entre 5 et 8%. Quant au taux d'équipement en dossier patient informatisé en France, "20% des CHU ont un DJI fiable, 40% sont en train de s'informatiser, et 20% en sont encore à la phase projet". Pas de quoi pavoiser... Pourtant, les performances américaines cache un état des lieux plus nuancé, selon Denis Ducasse "l'association des hôpitaux américains établit à 30% de leurs établissements de santé n'ont pas de DMP, 11% l'ont mis en œuvre, et 50% seulement en partie". Des statistiques proches de celles des CHU français. Mais les pays scandinaves ont une longueur d'avance 81% des hôpitaux suédois sont équipés d'un dossier patient informatisé. En France manque d'interopérabilité, manque de compétence, manque de financement : les systèmes d'information hospitaliers font grise mine à l'heure de la mise en place du plan Hôpital 2012. Tour d'horizon des blocages. Mais aussi des solutions. Qui va équiper les hôpitaux français. La tension a été forte ces derniers mois sur le marché des systèmes d'information hospitaliers, et plus précisément des systèmes cliniques.

Ghandour, E. K., Gagnon, M.-P. et Fortin, J.-P. (2017). "Conditions d'adoption du dossier de santé électronique par les professionnels de la première ligne au Québec : perspectives professionnelle et organisationnelle." *Santé Publique* 29(6): 837-850.

<https://www.cairn.info/revue-sante-publique-2017-6-page-837.htm>

Girault, D. (2013). "Programme Hôpital numérique : le nouveau schéma directeur des systèmes d'information hospitaliers ?" *Gestions Hospitalières*(526): 273-275, graph.

[BDSP. Notice produite par EHESP kn8C8R0x. Diffusion soumise à autorisation]. Dans les cours d'informatique médicale dispensés à l'hôpital Broussais par le Pr. Patrice Degoulet et son équipe, des composants transversaux étaient préconisés pour remplacer les applicatifs verticaux. (Dans l'article, schéma datant de 2002 présentant une modélisation des composants d'authentification des utilisateurs, d'identification des patients, de prescription informatisée multimodale pour les médecins, de planification de ressources et d'agenda du patient, de pilotage médico-économique). En 2011, les concepteurs du programme Hôpital numérique (PHN) ont concrétisé les concepts de production hospitalière décrits par Patrice Degoulet ; les trois prérequis et les cinq domaines prioritaires les déclinent en trente-deux indicateurs mesurables et compréhensibles par la communauté hospitalière. Leur mode de calcul est clairement défini dans le "Guide des indicateurs" publié par la Direction générale de l'offre de soins (DGOS).

Grall, J. Y., et al. (2008). "Rappels informatiques et recommandation. L'étude URIAP en médecine." Médecine : Revue De L'unaformec 4(10): 473-476.

La mise en œuvre de pratiques fondées sur les données scientifiques est l'un des enjeux actuels. Mais il est impossible au généraliste, à supposer même qu'il connaisse toutes ces données, de les utiliser dans le temps de la consultation. Des systèmes informatiques d'aide à la décision médicale (SIAD) pourraient l'y aider. Objectifs : Montrer que l'utilisation de SIAD élaborés à partir de recommandations augmente le recours habituel à ces recommandations. Méthode : Il est prévu deux étapes : 1) identification et extraction des données utiles et pertinentes de recommandations pour former un corpus de rappels (phase terminée en juin 2008), 2) évaluation de l'utilisation de ce corpus (fin prévue avant juin 2009). Résultats : L'outil a été développé pour 3 recommandations : migraine (qui a servi de « pilote » pour élaborer le projet), insomnie de l'adulte et dépression. La première phase de l'étude a permis de préparer des rappels informatiques dans les 3 champs où ils sont habituellement reconnus comme efficaces : alarmes, aide-mémoire pour la décision et documents types. L'évaluation d'impact se fera par deux types d'audit, prospectif et rétrospectif, comparant un groupe intervention (utilisant les rappels) à un groupe témoin (qui aura seulement lu les recommandations). Discussion : Si l'efficacité des rappels pour la pratique est connue, leur utilité pour « implémenter » des recommandations ne l'est pas. La participation active du médecin à leur mise au point devrait favoriser l'appropriation des recommandations. La sélection des seuls rappels utiles à la pratique devrait en éviter la multiplication, contre-productive.

Guicheteau, J., et al. (2008). "Dossier patient informatisé : une solution de déploiement originale." Revue Hospitalière De France(521): 35-37.

[BDSP. Notice produite par EHESP Eor89R0x. Diffusion soumise à autorisation]. L'informatisation de la production de soins et du dossier patient est un objectif prioritaire des établissements de santé. Les coûts de développement et de maintenance peuvent être optimisés, le paramétrage partagé et les délais de mise en œuvre réduits par un nouveau mode de déploiement : l'Application Service Provider. Le centre hospitalier de Valenciennes et le groupe Association hospitalière Nord Artois cliniques, établissement participant au service public hospitalier, ont conjugué leurs efforts. Ils déploient aujourd'hui sur ce mode leur solution de dossier unique du patient. (R.A.).

Hanske, A. (2013). "Tendances et stratégies en systèmes d'information de santé." Revue Hospitalière De France(550): 14-15.

[BDSP. Notice produite par EHESP R0xqBptr. Diffusion soumise à autorisation]. L'autre présente quelques axes et principes en matière de "e-mutation" en santé et revient sur les stratégies et tendances observées à travers les thématiques et communications proposées par les salons internationaux du secteur des technologies et systèmes d'information en santé.

Jacquinet, C. et Letondel, F. (2005). "L'hôpital communicant (2ème partie) - Informatisation des plannings et du temps de travail : une petite révolution culturelle pour les agents et le management hospitalier." Gestions Hospitalières(442): 57-59.

[BDSP. Notice produite par ENSP 4R0xVS8Y. Diffusion soumise à autorisation]. Depuis dix-huit mois, un nouveau logiciel de gestion des temps de travail et des activités (GTA) est installé dans deux établissements de 1 000 agents du Jura : le CH de Lons-le-Saunier et le CH Louis-Pasteur de Dole. Ce logiciel gère les plannings et les compteurs des agents (balance horaire, congés annuels, RTT...). Cet article présente un bilan d'utilisation de ce logiciel et tire la leçon d'une telle expérience.

Jolivaldt, F. et Le Gloan, C. (2016). "Préalables pour un SIH convergent au sein des GHT." Revue Hospitalière De France(569): 48-50.

[BDSP. Notice produite par EHESP pHR0xEDs. Diffusion soumise à autorisation]. L'article 107 de la loi de modernisation de notre système de santé prévoit la création de groupements hospitaliers de territoire au 1er juillet 2016 et le transfert de plusieurs activités à l'établissement support du GHT, notamment la gestion d'un système d'information hospitalier convergent. Cette mesure peut susciter

certaines interrogations : pourquoi transférer et mutualiser cette activité ? Qu'entend-t-on par "SIH convergent" et comment y parvenir ? Nos réponses permettent, d'une part de préciser le concept de SIH convergent et son rôle stratégique dans l'évolution de nos organisations hospitalières, d'autre part de dissiper certaines inquiétudes quant aux impacts de sa mise en œuvre.

De Kervasdoue, J. (2012). Carnet de santé de la France en 2012 : économie, droit et politiques de santé, Paris : FNMF Paris : Economica

Ce 7e Carnet de santé est publié à l'occasion du 40e Congrès national de la Mutualité Française. Parmi les sujets récurrents figurent le déficit de l'assurance maladie et son financement ainsi que l'aggravation des inégalités, notamment dans l'accès aux soins (partie 1). Et si les qualités du système français, internationalement reconnues, restent remarquables, son classement recule ! Introduction d'une « règle d'or » en matière de Sécurité sociale, fusion des régimes d'assurance maladie doublée d'une budgétisation des branches maladie et famille, utilisation appropriée des nouvelles technologies de l'information, évolutions possibles de la médecine générale au regard des nouvelles attentes des jeunes praticiens dont les femmes constituent une majorité, constituent les voies d'avenir possibles présentées dans la deuxième partie. Au titre des nouveaux thèmes traités dans ce Carnet 2012, deux politologues analysent la manière dont les idées viennent aux politiques. Le premier, américain, traitera du cas général, quand le second, français, l'illustrera à partir de l'exemple de notre pays (d'après la 4ème de couv.)

El Srraj, L., et al. (2011). "Entrepôt de données autour du PMSI pour le pilotage d'établissements hospitaliers." Techniques Hospitalières(729): 49-52.

[BDSP. Notice produite par EHESP I89R0x87. Diffusion soumise à autorisation]. Pour mettre en place la tarification à l'activité (T2A), les gestionnaires hospitaliers doivent pouvoir analyser selon différentes perspectives les données gérées par le Programme de médicalisation des systèmes d'information (PMSI) et les croiser avec des données externes à celui-ci. Dans ce contexte, l'élaboration d'un entrepôt de données à partir des données du PMSI mais intégrant d'autres sources de données est indispensable. Cet article présente une recherche en cours, menée dans le cadre d'une collaboration CHU-laboratoires de recherche, relative à l'élaboration d'un entrepôt de données, en prenant en compte à la fois la spécificité des données et les besoins en analyse des questionnaires hospitaliers.

Lafitte, M. (2007). Les systèmes d'information en santé, Paris : Les Editions de santé

Cet ouvrage est un plaidoyer en faveur du rôle majeur et structurant des technologies de l'information et de la communication dans la mise en place d'un nouveau paradigme organisationnel, en voie d'émergence, celui de l'exercice médical en réseau.

Larcher, P. et Polomeni, P. (2001). La santé en réseaux : objectifs et stratégie dans une collaboration ville-hôpital, Paris : Masson

Deux circulaires ont lancé dès 1991 le concept de « réseaux ville hôpital » et en 1994 celui de « réseaux de santé ». C'est lors de la réforme hospitalière de 1996 qu'est apparue dans la loi l'expression « réseaux de soins », autre concept qui figurait également dans l'ordonnance relative à la maîtrise médicalisée des dépenses de soins avec un sens encore différent. Cet ouvrage, faisant le lien entre la théorie et la pratique, a pour but de permettre aux professionnels des mondes médical et médico-social de retrouver leurs marques dans cette confusion sémantique pour assurer au patient une meilleure orientation, coordination, continuité des soins et une meilleure qualité des prestations dans ses allers-retours entre les professionnels des systèmes de soins de ville et l'hôpital. Sont également abordés les enjeux éthiques, techniques, financiers, et de politique de santé résultant d'une telle organisation, ainsi que l'évolution des textes pour s'adapter à cette transversalité nouvelle entre ville et hôpital.

Le Glantezec, P. , et al. (2009). "Le dossier pharmaceutique. Un nouvel outil dans la lutte contre l'iatrogénie médicamenteuse ?" Gestions Hospitalières(485): 228-233, tabl.

[BDSP. Notice produite par EHESP C9qnjR0x. Diffusion soumise à autorisation]. Les nouvelles technologies de l'information et des communications vont bientôt permettre de déployer le dossier médical partagé et le dossier pharmaceutique, deux supports informatisés distincts, accessibles en réseau par les professionnels de santé. Le dossier pharmaceutique, déployé dans un premier temps dans les pharmacies de ville, devrait s'étendre à l'hôpital et permettre de décloisonner ces deux domaines d'activité. L'anamnèse médicamenteuse du patient deviendrait ainsi accessible à l'hôpital et concernerait les traitements avant l'admission ou prescrits pendant l'hospitalisation. Le suivi thérapeutique par le contrôle de l'observance est aussi une plus-value indéniable, de même que la contribution aux différentes mesures de pharmacovigilance. Le dossier pharmaceutique peut ainsi être vu comme un moyen d'optimiser la prise en charge du patient en tentant de lui assurer un maximum d'efficacité dans l'acte de dispensation et de suivi thérapeutique.

Lebigre, M., et al. (2009). "SIH/NTIC. Dossier." Techniques Hospitalières(715): 17-35.

[BDSP. Notice produite par EHESP o9GDrR0x. Diffusion soumise à autorisation]. Quatre articles sont consacrés au thème de l'informatique hospitalière. Le premier article propose le résumé des interventions des 17èmes journées nationales des technologies de communication hospitalière qui se sont déroulées le 13-14 novembre 2008 à Avignon. Ces interventions ont porté notamment sur le partage de l'information en cancérologie, la mise en place d'un EAI (Enterprise Application Intégration), l'informatisation de la production de soins, le travail collaboratif en ligne et l'évaluation des pratiques professionnelles, les dispositifs d'e-formation, la visiophonie inter-établissements. Le deuxième article présente le développement du logiciel Easydore au CHU de Nantes, logiciel de suivi des budgets du bureau Recherche. Les troisième et quatrième articles s'intéressent aux nouvelles technologies dans le domaine des achats : bilan d'une plateforme commune d'e-procurement (Aurea) utilisée par 11 CHU aujourd'hui dans le cadre d'un groupement d'achat, présentation du groupement UniHA (Union des hôpitaux pour les achats) et de sa filière NTIC-SI créée en novembre 2006 et coordonnée par la direction informatique de l'Assistance publique-Hôpitaux de Marseille.

Lehmann, M., et al. (2015). "Enhancing medical coding through nurses'notes." Journal De Gestion Et D'Economie Médicales **33**(1): 61-71.

[BDSP. Notice produite par ORSRA R0xjn88l. Diffusion soumise à autorisation]. Introduction : Le codage de l'information médicale est une fonction stratégique des établissements de soins qui tend à se renforcer à partir de différentes sources de données. Le CHU de Montpellier a mis en place en 2013 un outil d'optimisation du codage basé sur les transmissions infirmières. L'objectif de l'étude était d'évaluer l'impact de cet outil sur l'incidence de certains diagnostics associés significatifs et sur la valorisation des séjours. Méthodes : L'outil génère automatiquement des alertes basées sur la recherche de mots clés dans les transmissions infirmières. Les RSS concernés sont ensuite revus et modifiés le cas échéant par le DIM. Résultats : Les deux-tiers des 13 977 RSS contrôlés en 2013 par le DIM ont fait l'objet d'au moins une alerte et au moins un DAS a été ajouté pour 1 480 d'entre eux (16.2%). L'incidence des DAS concernés a augmenté de plus de 50% par rapport à 2012. Le différentiel de valorisation moyen était de 1 122 Euros par RSS modifié. Conclusion : L'utilisation des transmissions infirmières pour optimiser le codage PMSI est prometteuse et constitue un moyen de valoriser le travail soignant. En revanche sa généralisation est dépendante de l'évolution des systèmes d'information hospitaliers. (résumé auteur).

Leroux, V. (2010). "Tic et Gouvernance. Qualité, sécurité et continuité. Défis et bonnes pratiques." Gestions Hospitalières(495): 268-272.

[BDSP. Notice produite par EHESP BBlo7R0x. Diffusion soumise à autorisation]. Les informations de santé sont considérées sensibles sur les plans personnel, professionnel et financier. La question des bonnes pratiques en matière de qualité, de sécurité et de continuité d'activité des systèmes et réseaux d'information (voix, donnée, image) en santé et de l'e-santé (télémédecine, télésanté...) est posée. Cette article propose une réflexion en la matière et intègre cette problématique dans le cadre plus large de la gouvernance des risques en santé.

Lesteven, P. (2008). "Systèmes d'information : au coeur du pilotage." Revue Hospitalière De France(520): 12-13.

[BDSP. Notice produite par EHESP 9s7pR0x8. Diffusion soumise à autorisation]. Dans cet article, la Fédération Hospitalière de France présente ses souhaits en matière d'organisation du système d'information en santé. Écartant l'idée d'une structure unique qui aurait en charge opérationnelle l'ensemble du système d'information en santé, la FHF appelle à la mise en place d'un dispositif constitué de plusieurs acteurs avec notamment un conseil stratégique des systèmes d'information rattaché aux services du Premier ministre et un comité opérationnel rattaché au ministère de la Santé. Elle estime que l'organisation à mettre en place doit préserver au maximum la capacité d'adaptation et de responsabilisation et que certaines actions sont à conduire de toute urgence : publication de cahiers des charges par fonction et par type d'établissement, incitation financière à l'interopérabilité, poursuite des expérimentations, formation et recrutement des compétences nécessaires au déploiement des technologies de l'information.

Lorrain, P., et al. (2001). "L'information et le patient : les illusions de la transparence." Pratiques : Les Cahiers De La Médecine Utopique(12): 57.

Lucas, J. (2008). "Réussir l'informatisation en santé - un défi : dossier." Bulletin De L'ordre Des Médecins(1): 8-12.

Dossier médical personnel, dossier pharmaceutique, web médecin, messageries sécurisées, sites e-santé : l'informatisation de la santé est désormais partout. Pour quels bénéfices, quels coûts et quels risques ? Ce dossier réalisé par le docteur Jacques Lucas, vice-président du Conseil national de l'Ordre tente de faire le point sur ces différents aspects.

Lucas, J. (2010). Dématérialisation des documents médicaux. Créer la confiance pour favoriser l'informatisation. 1- Les dossiers médicaux et leurs correspondances. Paris Ordre national des médecins: 37.

Par son engagement dans la construction du système d'information de santé, le CNOM poursuit un double objectif : accélérer l'usage des technologies de l'information et de la communication pour améliorer la qualité des soins et contribuer à garantir les fondements de la confiance des médecins et des patients dans le nouvel espace numérique de santé. En passant à l'ère de la dématérialisation, les médecins se retrouvent confrontés à des questions pratiques nouvelles sur les plans déontologique et réglementaire. C'est pourquoi le CNOM a souhaité, en publiant ce rapport, rappeler et synthétiser les principes et recommandations qui répondent aux exigences déontologiques de leur exercice. Bien que les exercices professionnels soient divers, tant dans les secteurs de soins que dans les autres secteurs d'activités médicales, le CNOM rappelle que tous les médecins sont soumis aux mêmes règles de déontologie professionnelle qui s'attachent ici principalement à la protection et la préservation de la confidentialité des données personnelles de santé. C'est, avec la reconnaissance confirmée de leurs compétences, le socle de la confiance massive dont les médecins disposent près des patients (tiré de l'intro).

Mascret, C. (2019). "Quel statut pour les données de santé ? In : Panorama de droit pharmaceutique - 2018." Revue Générale De Droit Médical(6): 137-147.

La révolution des technologies et l'irruption du digital et du big data en santé ont fait prendre conscience de la valeur que possédaient les données de santé tant sur le plan de la recherche, que l'on connaissait jusqu'alors, mais également sur un plan commercial. Alors que l'Europe vient de réviser sa réglementation afin de prendre en considération cette nouvelle donnée, il est intéressant de s'attarder sur le statut que possèdent ces données de santé tant convoitées.

Messner, L. (2012). "Systèmes d'information. Tout savoir sur le programme Hôpital numérique." Revue Hospitalière De France(545): 82-83.

[BDSP. Notice produite par EHESP sR0xMAA. Diffusion soumise à autorisation]. Le programme Hôpital numérique, lancé en novembre 2011, constitue la feuille de route à cinq ans (2012-2016) pour les systèmes d'information hospitaliers. Son ambition est d'amener l'ensemble des établissements vers un

premier niveau de maturité de leurs systèmes d'information. Pour ce faire, il propose un plan d'actions agissant sur quatre leviers à actionner de manière coordonnée.

Messner, L. et Jolivaldt, F. (2013). "Hôpital numérique, un programme en marche." Revue Hospitalière De France(550): 10-12.

[BDSP. Notice produite par EHESP AIHROxjp. Diffusion soumise à autorisation]. Le programme Hôpital numérique, piloté par la Direction générale de l'offre des soins, a été lancé voici un peu plus d'un an. En novembre 2011, paraissaient la feuille de route et le guide des indicateurs en termes de prérequis et domaines fonctionnels prioritaires. Le point dans cet article sur l'état d'avancement des chantiers à partir des quatre axes stratégiques du programme (gouvernance, compétences, offre, financement) ainsi que sur les outils opérationnels mis à disposition des agences régionales de santé et des établissements de santé (guide, outils d'autodiagnostic.).

Meyer, R. et Degoulet, P. (2010). "Tic et Hôpital. L'économie des systèmes d'information hospitaliers." Gestions Hospitalières(495): 250-255, tabl., fig.

[BDSP. Notice produite par EHESP R0xEI9mH. Diffusion soumise à autorisation]. Peu d'études ont été entreprises pour évaluer les bénéfices financiers des systèmes d'information hospitaliers (SIH), en particulier dans le contexte d'une stratégie globale d'informatisation des processus. À partir d'exemples significatifs, les auteurs illustrent et discutent les résultats et les limites des études visant à quantifier le retour sur investissement des SIH. Ils militent pour le développement, à l'échelon français comme européen, d'un observatoire de l'état d'informatisation des hôpitaux, seul à même de mesurer, à moyen et long termes, l'impact des investissements qui devront nécessairement être effectués pour combler le retard français dans le secteur. (R.A.).

Mousques, J. et Sermet, C. (2003). Evaluation des rappels informatiques dans l'instauration et le suivi de l'éducation diététique de patients diabétiques de type 2, obèses ou en surpoids. Rapport d'étude. Document de travail Irdes. Paris IRDES: 119.

<http://www.irdes.fr/Publications/Rapports2003/doc1494bisEvaluationRappelsInfos.pdf>

Ce rapport de projet de recherche a été réalisé dans le cadre de l'appel à projet de recherche de l'Agence Nationale d'accréditation et d'évaluation en Santé 2000-2001 et remis à l'ANAES en décembre 2003. Cette étude s'inscrit dans le cadre de recherches menées depuis plusieurs années au sein de l'IRDES afin, tout d'abord, de comprendre les déterminants de la variabilité des pratiques médicales, puis, aujourd'hui, d'évaluer l'impact de certaines interventions ayant pour objectif de promouvoir des pratiques médicales plus efficaces ou plus efficientes. Il s'agit ici d'évaluer l'impact, dans le contexte spécifique de la médecine générale française, d'un type d'intervention novateur consistant à rappeler au médecin, au moment de sa rencontre avec un patient diabétique et par le biais d'une alerte générée par son logiciel informatique, les recommandations relatives à l'éducation diététique des patients diabétiques de type 2. L'étude a été réalisée en collaboration avec la société BKL-Thales entre 2001 et 2003, à partir des données de leurs panels de généralistes informatisés.

Normand, Y., et al. (2010). "Hôpital, patient, système d'information. Dossier." Techniques Hospitalières(721): 65-87, fig.

[BDSP. Notice produite par EHESP s9mDR0xp. Diffusion soumise à autorisation]. La 18ème journée nationale Athos qui est tenue à Pau en novembre 2009 a permis de rassembler 250 personnes autour du thème "Hôpital, patient, système d'information" et d'échanger sur les expérimentations et pratiques de plusieurs centres hospitaliers. Cet article nous en présente quelques extraits qui traitent de : - la politique de sécurité des systèmes d'information et la confidentialité des informations médicales - la plateforme "Télésanté Aquitaine" qui favorise les échanges ville-hôpital - l'évolution des systèmes d'information hospitaliers face aux territoires de santé et aux communautés hospitalières de territoire - l'informatisation du dossier patient au centre hospitalier de Mont-de-Marsan et à l'hôpital local de Mauléon-Soule - la mise en place de trois unités de dialyse médicalisée télésurveillée (UDMT) sur le territoire des Côtes d'Armor par le centre hospitalier de Saint-Brieuc.

Olesen, F. et Markussen, R. (2004). "Du stylo à l'ordinateur : la médication comme pratique sociotechnique." Sciences Sociales Et Sante **22**(1): 69-94, 61 graph., 63 tabl.

Cet article est consacré à l'analyse de ce qui pourrait apparaître à première vue comme une micro-innovation dans le domaine de l'informatique médicale, à savoir l'introduction, dans un hôpital danois, d'un module électronique destiné à la prescription médicamenteuse. En s'appuyant sur une analyse sémiotique fouillée du module et de ses usages, les auteurs montrent que, même dans ce cas, pour que le module puisse fonctionner correctement et remplir son objectif de simplification, il est nécessaire que soit accomplie toute une série de transformations locales : ces transformations concernent aussi bien les savoirs et les pratiques mis en œuvre par l'ensemble des professionnels impliqués dans les tâches coordonnées par le module que les relations entre ces professionnels jusqu'à la vie même des patients (Extrait du résumé d'auteur).

Omnes, L. (2010). "Tic et Hôpital. Investir plus dans la Toile et moins dans le béton." Gestions Hospitalières(495): 241-244.

[BDSP. Notice produite par EHESP 8BtIDR0x. Diffusion soumise à autorisation]. Cet article revient sur les bénéfices attendus des technologies de l'information et de la communication TIC appliquées au domaine hospitalier suivant deux composantes : Celle de l'espace de santé et du soins, en terme de coordination, qualité, rapidité et sécurité du soins ; Et celle de l'hôpital comme entreprise de service en terme de valeur ajoutée, d'organisation sociale et d'expertise. Cependant, dans le contexte du plan ministériel "hôpital numérique", les frilosités d'investissement dans ces nouvelles technologies persistent. C'est l'occasion pour l'auteur de rappeler les conditions nécessaires à la réussite de la mise en place de telles technologies.

Oussar, E. (2005). "L'hôpital communicant (2ème partie) - Troisième forum des DSIO. Mutualisation : l'avenir des systèmes d'information ? Ou de l'envol des systèmes d'information de santé." Gestions Hospitalières(442): 34-39.

[BDSP. Notice produite par ENSP Y8mxOR0x. Diffusion soumise à autorisation]. Le troisième forum des Directeurs des systèmes d'information et d'organisation (DSIO) des centres hospitaliers a été consacré à la mutualisation des systèmes d'information. Après avoir rappelé que la mutualisation a de longue date été expérimentée et qu'il existe des contraintes à sa mise en œuvre, le forum s'est intéressé à son renouveau dû à un contexte juridique, stratégique et financier modifié. En effet, l'évolution des règles juridiques en la matière a enrichi les possibilités pour les établissements de santé de recourir à cette modalité de fonctionnement : le groupement de coopération sanitaire (GCS) a vu notamment son champ d'actions et d'acteurs s'élargir au fil des textes législatifs récents et constitue un cadre juridique de flux entre établissements, de quelque nature juridique qu'il soit. Ce renouveau de la mutualisation correspond également à un besoin de plus en plus clairement affirmé face à la réorganisation des systèmes d'information qui implique le partage d'information et l'échange réciproque de méthodes et de procédés.

Penhouet, D. (2010). "Tic et Territoires. Espace régional, territoires et systèmes d'information de santé." Gestions Hospitalières(495): 201-205.

[BDSP. Notice produite par EHESP skR0xGGE. Diffusion soumise à autorisation]. La mise en œuvre de la loi Hôpital, patients, santé, territoires invite fortement les systèmes d'information à apporter des réponses concrètes aux enjeux de l'organisation sanitaire. Sur fond d'aménagement numérique du territoire, l'information des acteurs de santé dépasse la somme des décisions d'investissements de chacun et invite à s'inscrire dans la cohérence d'un projet régional de système d'information, concrètement conçu et mis au service des patients et des professionnels de santé. Les enjeux sont liés à l'optimisation de l'organisation et la qualité des soins, et à la conduite du changement. Les projets régionaux doivent être confiés à une maîtrise d'ouvrage forte, portée institutionnellement par une agence veillant à sa cohérence avec les priorités de santé régionales et pilotée par une structure fédérant l'ensemble des acteurs de santé de la région. (R.A.).

Perrin, B. (2004). "L'hôpital communicant (1ère partie) - Assistance publique-Hôpitaux de Paris. Un schéma cible pour le système d'information." Gestions Hospitalières(441): 783-785.

[BDSP. Notice produite par ENSP ZR0xZ4Wm. Diffusion soumise à autorisation]. L'AP-HP a été amenée à conduire une étude de schéma cible de son système d'information. Pilotée au plus haut niveau de l'institution, menée dans un délai limité et avec une très forte mobilisation interne, cette opération a conduit à un programme de développement couvrant de nombreux domaines fonctionnels et induisant une forte évolution de son architecture technique avec une recherche de gains d'exploitation.

Picard, R. et Dardayrol, J. P. (2011). Les conditions de création de valeur des logiciels sociaux en santé et autonomie. Paris CGIET: 164.

Ce rapport réalisé par le Conseil Général de l'Industrie, de l'Energie et des Technologies, à la demande du ministère de la Santé, analyse, au-delà du discours des promoteurs de la Santé 2.0, la valeur potentielle des logiciels sociaux dans le secteur santé-social, en s'appuyant sur la réalité sociale et l'observation des communautés constituées utilisatrices de ces outils. A la suite du Médiateur, la Puissance publique s'interroge sur les conditions d'une information médicale publique fiable, indépendante et accessible. Les résultats de ce rapport sont riches d'enseignements. L'usage croissant de ces logiciels dits « sociaux » dans ces secteurs peut contribuer à une dissémination rapide des connaissances et à l'émergence de nouveaux savoirs issus de la réalité quotidienne des patients, des aidants, des professionnels. Mais ces outils ont aussi un impact significatif sur la relation entre le patient, ses proches et le médecin et les professionnels de santé.

Pierron, A., et al. (2015). "Évaluation de la qualité métrologique des données du programme de médicalisation du système d'information (PMSI) en périnatalité : étude pilote réalisée dans 3 CHU." Revue D'épidémiologie Et De Santé Publique 63(4): 237-246, tabl., rés.

[BDSP. Notice produite par ORSRA J9CJR0xl. Diffusion soumise à autorisation]. Position du problème : La France est l'un des derniers pays européens à ne pas pouvoir fournir d'informations périnatales fiables, indispensables à la réalisation de travaux de recherche et à la production d'indicateurs nationaux. Le système d'information périnatale en France est fragmenté et les données, difficiles à regrouper, ne répondent pas aux exigences d'Europeristat. Les données du PMSI offrent la potentialité de fournir des informations systématiques et standardisées pour l'ensemble des naissances. L'objectif était d'étudier la qualité métrologique des données du PMSI pour construire des indicateurs de base en santé périnatale dans trois centres hospitaliers universitaires, avant de mener une étude nationale. Méthode : Les données du PMSI ont été confrontées à celles des dossiers patients en 2012 pour 300 naissances vivantes après 22 semaines d'aménorrhée, dans trois centres hospitaliers et universitaires (Dijon, Port-Royal et Nancy). Les variables analysées ont été sélectionnées à partir des indicateurs du projet Europeristat et de l'enquête nationale périnatale de 2010. Les informations recueillies dans les dossiers patients ont été confrontées aux données PMSI et la qualité des données PMSI a été estimée par le calcul de la valeur prédictive positive (VPP) et par la sensibilité. Résultats : Les distributions de l'âge maternel, de la parité pour les accouchements par voie basse, du mode d'accouchement, ainsi que le nombre de naissances prématurées sont très voisines entre les deux sources. La VPP pour l'anesthésie péridurale est de 96,2% et 94,3% pour les déchirures périnéales. Elle s'élève à 100,0% pour le diabète préexistant et 88,9% pour le diabète gestationnel. L'hypertension artérielle est sous-estimée dans le PMSI, égale à 9,0% dans les dossiers versus 6,3% dans le PMSI, avec cependant une VPP à 100,0%. La VPP pour l'hémorragie de la délivrance est de 89,5% et de 68% pour la rupture prématurée des membranes. Conclusion : Il nous semble réalisable de mener une étude nationale dans le contexte actuel évoluant vers une plus grande fiabilité des données du PMSI, d'une part, du fait de l'importance de ces données pour la valorisation budgétaire des établissements et, d'autre part, du fait de l'utilisation accrue de ces informations à des fins statistiques et épidémiologiques.

Plassais, O. (2016). "Vendée : GHT et systèmes d'information hospitaliers convergents." Revue Hospitalière De France(569): 44-47, fig.

[BDSP. Notice produite par EHESP ER0xI98I. Diffusion soumise à autorisation]. Les futurs groupements hospitaliers de territoire (GHT) s'adosseront à des systèmes d'information convergents. Le défi est réel mais les atouts existent. Se dessine la perspective d'un parcours patient fluidifié et d'activités médico-soignantes facilitées, d'une gestion logistique et administrative plus efficiente. Ces gains sont possibles, envisageables. Des travaux de convergence SI ont déjà été entrepris au sein de directions communes et de plusieurs communautés hospitalières de territoire (CHT). En Vendée, le centre hospitalier départemental et la CHT ont élaboré cette dynamique préfiguratrice.

Polton, D. (2018). "Les données de santé." *Médecine Sciences* 34(5): 449-455.

En matière de santé comme dans d'autres secteurs, une masse croissante de données numérisées provenant de diverses sources est disponible et exploitable. C'est l'un des domaines où le potentiel du Big data apparaît très prometteur, avec de multiples innovations au bénéfice des patients et du système (accélération de la recherche et développement, connaissance des maladies, des facteurs de risque, médecine personnalisée, aide au diagnostic et au traitement, rôle accru des patients, pharmacovigilance, etc.), même si des inquiétudes s'expriment aussi vis-à-vis des impacts sociétaux, économiques et éthiques que le recours croissant aux algorithmes et à l'intelligence artificielle pourrait induire. Développer l'usage de ces données constitue un objectif stratégique de tous les systèmes de santé, et de ce point de vue le Système national de données de santé (SNDS) constitue pour la France un patrimoine intéressant, mais qui demande à être complété et enrichi.

Quantain, C. (2008). "Système d'Information hospitalier et Épidémiologie." *Revue D'épidémiologie Et De Sante Publique* 56: 58.

[BDSP. Notice produite par ORSRA I9IrJROx. Diffusion soumise à autorisation]. Ce fascicule présente les communications orales (résumés) et les communications affichées du Colloque organisé les 3 et 4 avril 2008 à Saint-Malo, sur le thème du PMSI et de l'épidémiologie.

Quin, F., et al. (2007). "Quelle politique pour la gestion des données médicales numérisées ?" *Techniques Hospitalières*(701): 31-36.

[BDSP. Notice produite par ENSP 8R0xTha1. Diffusion soumise à autorisation]. A l'occasion des deuxièmes assises de l'informatique en santé qui se sont tenues le 7 novembre 2006, nouvelles tendances et enjeux de la numérisation des données médicales ont été abordés. La numérisation va notamment améliorer la coordination des soins entre les acteurs de santé, faciliter l'archivage, améliorer la qualité des prescriptions, responsabiliser et mieux informer le patient et, par conséquent, réduire les coûts de l'assurance maladie. Mais il faut cependant être attentif à la confidentialité des données ainsi qu'au risque de ne devenir qu'un "médecin informatique". Aujourd'hui, la tendance au niveau mondial est à la mise en commun de l'information médicale dans un dossier patient partagé par un grand nombre d'acteurs. En France, la loi du 13 août 2004 relative à l'assurance maladie, a créé le dossier médical personnel (DMP), un projet informatique dont l'architecture logicielle est évolutive et repose sur des technologies standards. Actuellement testé sur dix-sept sites pilotes, le DMP devrait être déployé dès juillet 2007 et prévoit une enveloppe de vingt millions d'euros destinée à la formation des professionnels de santé et à l'accompagnement au changement. Mais son déploiement justifie un niveau d'équipement adapté des professionnels de santé qui tarde encore. Si les aides accordées par l'assurance maladie ont permis d'équiper en matériel informatique entre 80% et 85% des médecins libéraux, seuls 40% d'entre eux ont aujourd'hui recours à des dossiers médicaux électroniques et seuls 20% disposent d'un accès internet haut débit. De même, d'importants investissements restent à faire au niveau des hôpitaux qui ne consacrent que 0,5% et 1% de leur budget à l'informatisation, contre 2,5% pour les hôpitaux universitaires américains et canadiens.

Riondet, J. (2010). "Tic et Territoires. DMP et territoires." *Gestions Hospitalières*(495): 206-211.

[BDSP. Notice produite par EHESP 9ER0xAFB. Diffusion soumise à autorisation]. À travers l'expérience du réseau santé gériatrique Cormadom, l'auteur, directeur du réseau, dresse une analyse des perspectives en ce qui concerne l'adoption des nouveaux outils informationnels de santé par les professionnels. Cet exemple de réseau coordonné de soins, entre établissements hospitaliers et

médecine de ville, permet d'identifier les conditions de réussite d'un outil tel que le Dossier Médical Personnel ou un Système d'Information de santé régionalisé.

Riou, C., et al. (2015). "Contrôle automatisé de l'exhaustivité du registre breton des malformations congénitales à partir des données des bases médico-administratives des établissements de santé." Revue D'épidémiologie Et De Sante Publique **63**(4): 223-235, tabl., fig., rés.

[BDSP. Notice produite par ORSRA oCR0xn8A. Diffusion soumise à autorisation]. Position du problème : Un registre se définit comme un enregistrement exhaustif de cas. Le registre breton des malformations congénitales s'appuie sur une déclaration des cas à la source. Les résumés de séjour hospitaliers du programme de médicalisation des systèmes d'information (PMSI) permettent de vérifier la complétude des déclarations. Nous présentons dans cet article un outil informatisé de contrôle d'exhaustivité des cas. Méthodes : Le contrôle d'exhaustivité est réalisé une fois par an selon le même protocole pour tous les établissements de la région. La sélection des séjours porte sur les enfants nés vivants jusqu'à l'âge de 1 an et sur les séjours des mères pour les enfants mort-nés et les interruptions médicales de grossesse. Les données d'identité sont obtenues par croisement avec les bases administratives. Les fichiers sont transmis par messagerie sécurisée et traités sur un serveur sécurisé. Un algorithme de rapprochement d'identités est implémenté. Les cas non rapprochés avec un cas du registre donnent lieu à un retour au dossier médical. L'exhaustivité théorique du registre est évaluée par la méthode de capture recapture. L'évaluation de l'algorithme de rapprochement d'identités est basée sur le nombre de rapprochements manuels. Résultats : En ce qui concerne les années 2011 et 2012 sur le département d'Île-et-Vilaine, le nombre de cas potentiels repérés par le PMSI était de 470 pour 2011 et de 538 pour 2012 ; 35 nouveaux cas ont été détectés pour 2011 (32 enfants nés vivants et 3 mort-nés ou IMG) et 33 pour 2012 (enfants nés vivants). Il y avait 85 faux positifs pour 2011 et 137 pour 2012. Le taux d'exhaustivité théorique était de 91% chaque année. Un rapprochement parfait a été retrouvé pour 68% des cas PMSI, 6% des cas ont été rapprochés manuellement. Conclusion : Les bases de données de RSS du PMSI des établissements contribuent à améliorer la qualité du registre bien qu'il y ait une déclaration des cas à la source. L'outil développé facilite le travail des enquêteurs. Le croisement entre les cas registre et les cas PMSI pourrait être facilité par l'utilisation du numéro d'inscription au Répertoire national d'identification des personnes physiques.

Rives, V., et al. (2004). "L'hôpital communicant (1ère partie) - Résultats d'enquêtes. Les systèmes d'information de 900 hôpitaux européens passés au crible. Position de la France et orientations futures." Gestions Hospitalières(441): 772-776, tabl.

[BDSP. Notice produite par ENSP 1R0xF5xI. Diffusion soumise à autorisation]. En dépit de l'augmentation des dépenses dans les nouvelles technologies des établissements, beaucoup d'observateurs sont pessimistes quant au développement des systèmes d'information. Les auteurs s'appuient sur les données de l'enquête HINE 2004 afin de présenter la situation actuelle, en France, des technologies de l'information dans les établissements de soins, en comparaison avec d'autres États européens, et de proposer des éléments de perspective.

Robin, J.-Y. (2010). "Tic et Territoires. Améliorer la coordination des soins en établissement." Gestions Hospitalières(495): 214-217.

[BDSP. Notice produite par EHESP 7mtR0xE7. Diffusion soumise à autorisation]. Dans le secteur hospitalier, l'informatisation est encore à ses débuts. Or, son développement est une condition de réussite majeure des évolutions actuelles en matière de qualité et de coordination des soins. Les travaux de l'ASIP (Agence des Systèmes Partagés de Santé) s'inscrivent dans cette perspectives et visent à favoriser le développement de l'usage des systèmes d'information jusqu'au coeur même du système de soins hospitaliers. Cet article revient sur le contexte de la naissance de cette Agence et nous présente ses grands chantiers. Elle sera notamment responsable de la relance du DMP, l'aboutissement du plan Bureautique Santé tout comme la diversification des procédés de sécurisation des données de santé dont la CPS fait partie.

Robin, J.-Y. (2011). "Organisation des soins primaires et systèmes d'information. Des outils au service de la pratique professionnelle." *Revue Hospitalière De France*(538): 17-19.

[BDSP. Notice produite par EHESP F99AR0xA. Diffusion soumise à autorisation]. Les systèmes d'information font partie des outils stratégiques d'appui aux nouveaux modes organisationnels introduits par la loi HPST et la réforme de l'organisation des soins. L'ASIP Santé s'est engagée auprès des acteurs du soins pour mener une réflexion sur le développement des systèmes d'information, au service de leurs pratiques. L'objectif final est l'amélioration constante de la qualité et de la continuité des soins délivrés aux patients.

Routier, C. et Arripe, A. (2010). *Communication & santé : enjeux contemporains*, Villeneuve d'Ascq : Presses universitaires du Septentrion

<http://www.histoiredesmedias.com/Communication-et-sante-Enjeux.html>

La communication est au cœur de la santé contemporaine depuis les politiques publiques jusqu'à la relation patient-soignant, derrière la médiatisation de notre système de santé et ses évolutions, dans la rencontre de publics hétérogènes par des professionnels multiples. L'interdisciplinarité est désormais le maître mot et la communication, le carrefour des questions émergentes du monde de la santé. Considérer chacun dans son vécu de la maladie, tracer l'évolution des conceptions et des modèles de la santé, développer le travail en réseau pour une santé globalisée, partager l'information et les connaissances médicales avec le plus grand nombre. Tels sont quelques-uns des enjeux abordés dans cet ouvrage. En dialogue avec les professionnels et avec la société civile, une trentaine de chercheurs développent ici leurs analyses des réseaux de santé, du discours des médias, de l'usage des TIC (technologies de l'information et de la communication) et des lieux de soin. Les étudiants et enseignants en Sciences de l'information et de la Communication seront directement interpellés par ces analyses. Par la variété des travaux rassemblés, cet ouvrage est une contribution inédite qui séduira également tout lecteur universitaire intéressé aux apports des sciences humaines et des sciences sociales en santé. Enfin, les cadres intermédiaires et supérieurs du monde de la santé y trouveront également des perspectives (4e de couverture).

Saiche, D. (2008). Dossier médical personnel (DMP) en phase d'expérimentation nationale : résultats obtenus en Alsace en secteur libéral et hospitalier. Strasbourg Université Louis Pasteur, Université Louis Pasteur. Faculté de Médecine. Strasbourg. FRA. **Thèse de doctorat en médecine.**: 204 , tabl.

Le Dossier Médical Personnel (DMP) est un dossier médical informatisé, accessible par Internet et stocké par un hébergeur agréé et sécurisé, dont le seul propriétaire est le patient. Le DMP s'inscrit dans la loi de réforme de l'Assurance Maladie du 13 août 2004, ce nouvel outil devant contribuer à l'amélioration de la qualité de soins et à la maîtrise des dépenses de santé. Il s'agit d'un projet ambitieux et très complexe mettant en scène de nombreux intervenants : les représentants du gouvernement, le système de soins libéral, le système de soins hospitalier, les industriels et les utilisateurs (les patients). Face à la complexité et au caractère innovant de ce dossier, il paraissait indispensable de lancer une phase d'expérimentation avant d'envisager sa généralisation, initialement prévue au 1er juillet 2007. L'expérimentation s'est orientée vers le secteur de santé libéral et le secteur de santé hospitalier. Le Groupement d'Intérêt Public du DMP (GIP-DMP) a été créé en avril 2005 afin de manager cette première phase. Ainsi 17 sites pilotes répartis au sein de 13 régions françaises ont été retenus par le GIP-DMP en février 2006. Chaque site pilote est rattaché à un hébergeur parmi les 6 consortiums sélectionnés en octobre 2005 puis agréés, la région Alsace ayant choisi le groupement Thalès- Cegedim. L'expérimentation a officiellement été lancée au 1er juin 2006, pour se bousculer à l'automne, et être clôturée le 31 décembre de cette même année. En Alsace, un premier groupe de 72 médecins libéraux, dont 62 médecins généralistes, a ouvert 881 DMP. Seuls 50 % d'entre eux (36) ont utilisé des DMP : 1294 documents ont été soumis et 445 documents ont été consultés, l'ensemble de ces documents correspond dans près de la moitié des cas à des comptes-rendus de consultation. Outre quelques dysfonctionnements d'ordre technique (difficultés d'installation et d'utilisation des interfaces DMP, problèmes d'accès aux dossiers), il a été relevé une lenteur et des erreurs d'ordre administratif lors de la procédure d'ouverture des dossiers (problèmes liés aux AQS); un bon nombre de médecins actifs souhaiteraient par ailleurs une meilleure ergonomie du DMP. Un deuxième groupe de médecins hospitaliers du CHU de Strasbourg et du CH de Saverne,

dont le nombre n'a pu être défini, a ouvert 1600 DMP. Mais seuls 9 documents ont été consultés et aucun document n'a été soumis aux DMP. La non utilisation hospitalière des DMP est principalement liée à des défauts techniques et à une période trop restreinte de l'expérimentation. A l'issue de cette phase expérimentale, il semble évident que le DMP n'est pas opérationnel, et qu'il faille se donner le temps nécessaire à l'amélioration et à la mise au point de cet outil, afin d'espérer sa généralisation prochaine à tous les Français.

Sauret, J. (2010). "Économie des nouveaux systèmes d'information en santé." Sève : Les Tribunes De La Sante(29): 59-68.

Annoncés comme très prometteurs, les systèmes d'information en santé n'ont pas débouché en France sur toutes les améliorations attendues. L'analyse de la situation montre que les avancées ont été significatives, mais très hétérogènes. La France accuse aujourd'hui un vrai retard sur les pays équivalents. Pour autant, les gains que pourraient apporter des systèmes d'information performants restent très importants, tant pour la qualité des soins que pour les aspects financiers ou pour le pilotage du système. Cependant, la réalisation de ces gains est soumise à certaines conditions, non encore réunies (résumé de l'éditeur).

Schuers, M., et al. (2016). "Intérêt et utilisabilité du dossier pharmaceutique en pratique médicale. Enquête auprès de médecins et pharmaciens hospitaliers (étude MATRIX)." Revue D'épidémiologie Et De Sante Publique 64(4): 229-236.

[BDSP. Notice produite par ESP-NANCY nJROx9E. Diffusion soumise à autorisation]. Une expérimentation a été lancée en 2013 pour évaluer l'impact de la consultation du dossier pharmaceutique dans les services d'urgences, de gériatrie et d'anesthésie-réanimation de 55 établissements hospitaliers. L'objectif de cette étude était d'évaluer l'intérêt et l'utilisabilité du dossier pharmaceutique auprès des médecins et pharmaciens utilisateurs. Un auto-questionnaire électronique a été envoyé à tous les pharmaciens, anesthésistes-réanimateurs, gériatres et urgentistes des 55 établissements expérimentateurs du dossier pharmaceutique. Ce questionnaire évaluait l'utilisabilité du dossier pharmaceutique via la traduction française de l'échelle d'utilisabilité des systèmes, ainsi que l'usage du dossier pharmaceutique, son intérêt et ses limites perçues dans la pratique clinique et la satisfaction générale vis-à-vis de l'outil. Les questionnaires ont été collectés de novembre 2014 à janvier 2015. Quarante-sept questionnaires ont été recueillis. Ils concernaient 47 centres hospitaliers, soit 86% des 55 établissements expérimentateurs du dossier pharmaceutique. Le recoupement des réponses a permis d'identifier 36 établissements au sein desquels le dossier pharmaceutique était actif. Soixante-treize questionnaires remplis par des praticiens ayant pu expérimenter le dossier pharmaceutique ont pu être exploités. Parmi les répondants, on comptait 57% de pharmaciens (n=42) et 43% de médecins (n=31), dont 13 gériatres, 11 urgentistes et 7 anesthésistes-réanimateurs. Le score moyen d'utilisabilité du dossier pharmaceutique était de 62,5 sur 100. Il ne variait ni selon la profession du répondant, ni selon son ancienneté d'exercice. Il était positivement corrélé à la fréquence d'utilisation. Plus de la moitié des répondants déclaraient utiliser rarement, ou jamais, le dossier pharmaceutique. La durée de la période d'accès aux données du dossier était considérée comme insuffisante. L'absence de mention des posologies des médicaments délivrés, le faible nombre de patients disposant de leur carte d'assurance maladie et le faible nombre de patients ayant un dossier pharmaceutique ouvert constituaient les principaux obstacles à une plus grande utilisation du dossier pharmaceutique. Deux ans après le début de l'expérimentation visant à élargir l'accès au dossier pharmaceutique à des professionnels médicaux, les premiers éléments d'évaluation sont encourageants. Il reste nécessaire d'évaluer les conséquences de l'accès au dossier pharmaceutique pour les médecins.

Segade, J.-P. et Ponties, O. (2004). "L'hôpital communicant (1ère partie) - L'informatique hospitalière. Du temps des équivoques au temps des certitudes." Gestions Hospitalières(441): 769-771.

[BDSP. Notice produite par ENSP KDR0xZol. Diffusion soumise à autorisation]. La mise en place de la tarification à l'activité va susciter une forte demande en informatique d'autant plus accentuée que les impératifs d'une gestion par pôles et centres de responsabilités se mettent en place en parallèle avec la réforme de la comptabilité analytique. Comment se situera la rencontre entre les équipes

informatiques en voie de structuration et une demande en forte expansion ? La réponse à cette question suppose levées les multiples équivoques qui caractérisent le débat toujours brûlant de l'informatique hospitalière, mais aussi les certitudes qui s'imposent à nous.

Segade, J.-P. et Ponties, O. (2006). "Technologies d'information et de communication (TIC) : un investissement hospitalier, pour quoi faire ?" Gestions Hospitalières(455): 266-269.

[BDSP. Notice produite par ENSP cR0xFSBf. Diffusion soumise à autorisation]. Malgré des investissements conséquents et des problématiques de gestion, le développement des TIC est une démarche importante pour l'hôpital. Outre des économies de fonctionnement, les TIC poussent les hôpitaux à réfléchir à leur organisation et permet aux acteurs de santé de se recentrer sur la fonction soin en les libérant du travail administratif. Selon la formule des auteurs : "Plus d'investissements aujourd'hui, c'est plus de soins demain. Plus de TIC aujourd'hui, c'est plus de temps consacré aux soins de demain".

Simon, P., Douville, T. et Gruson, D. (2018). "Big data et santé : du discours aux applications pratiques. Dossier thématique." Journal De Droit De La Sante Et De L' Assurance Maladie(20): 7-36.

A l'heure du développement de l'intelligence artificielle et de la prolifération d'outils permettant d'accompagner la relation médicale, ce dossier met en évidence plusieurs traits caractéristiques. Il souligne l'importance de la prolifération des données en santé, qu'il s'agisse de celles transmises aux instances de santé, aux professionnels de santé, aux patients eux-mêmes ou encore aux acteurs du secteur du bien-être. Pour autant, l'ouverture de ces données de santé s'accompagne inévitablement de nombreuses interrogations : la définition tout d'abord de la notion de donnée de santé, la question ensuite de sa finalité qui conditionne le régime juridique applicable. Celui-ci est-il suffisamment protecteur à l'heure où les GAFAM récupèrent les données de chacune et chacun d'entre nous ? La question du consentement de la personne au prélèvement et au traitement de ses données, est au cœur de la réflexion. Le consentement est l'élément pivot, permettant d'assurer la garantie du droit fondamental à la protection de la vie privée. Les enjeux des big data, au travers notamment des développements de l'intelligence artificielle, font l'objet de travaux dans le cadre de la révision des lois de bioéthique.

Simon, F. (2008). Maisons de santé pluriprofessionnelles et déontologie médicale. Paris CNOM: 3.

Les sites ou maisons de santé interprofessionnelles sont présentés par les pouvoirs publics comme la solution pour les secteurs déficitaires. De façon plus générale, ce concept dépasse largement ces zones pour devenir une forme de l'offre de soins. La coexistence de différents professionnels de santé, voire de travailleurs sociaux, au sein d'une même structure a conduit les conseils départementaux et régionaux de l'Ordre mais aussi les URML à questionner le Conseil national de l'Ordre des médecins sur leur compatibilité avec nos principes déontologiques et les règles édictées dans le code de déontologie médicale. C'est à ces questions que le Conseil national de l'Ordre des médecins s'efforce aujourd'hui de répondre (extrait de l'intro.)

Simon, P. et Michel, R. (2010). "Tic et Territoires. Télémédecine et aménagement du territoire sanitaire." Gestions Hospitalières(495): 219-221.

[BDSP. Notice produite par EHESP DR0xpmCo. Diffusion soumise à autorisation]. La loi n°2009-879 du 21 juillet 2009 portant réforme de l'hôpital et relative aux patients, à la santé et aux territoires (HPST) autorise de nouvelles organisations de soins et de nouvelles pratiques professionnelles. Cet article porte sur le développement de la télémédecine, acte médical à distance, aujourd'hui autorisée et préconisée par la loi. Il revient sur les actes concernés par la télémédecine, les responsabilités médicales mises en jeu et les conséquences sur l'aménagement du territoire de santé. Un aménagement au service du parcours de soins et notamment du soin à domicile. La télémédecine se définit ainsi comme un enjeu de développement sanitaire et médico-social pour les territoires.

Sohier, R., et al. (2014). "Système d'information hospitalier et épidémiologie." Revue D'épidémiologie Et De Sante Publique 62(S3): 41.

[BDSP. Notice produite par ORSRA E9pIR0xH. Diffusion soumise à autorisation]. Le colloque "Système d'information hospitalier et épidémiologie" a été organisé conjointement par l'Association des épidémiologistes de langue française (Adelf) et l'Association Évaluation, management, organisations, santé (Emois). Il examine la qualité des pratiques et des soins (évaluation, indicateurs, pertinence des actes et des stratégies), le lien PMSI et épidémiologie, les systèmes d'informations et d'aide à la décision, la production et de la confidentialité de l'information médicale, les parcours de soin du sanitaire au médico-social, des rôles dans la chaîne de facturation, l'utilisation de l'information médicale pour le prévision de l'activité (analyse de l'activité, stratégie et contractualisation), les professionnels dans le DIM et leurs rôles. Il analyse également d'autres expériences internationales, d'autres secteurs (activité interne, HAD, SSR, psychiatrie), et le réseau REDSIAM.

Spido, G. (2012). "Prémices d'un système d'information en santé." Revue Hospitalière De France(544): 41-43.

[BDSP. Notice produite par EHESP BBR0xA8s. Diffusion soumise à autorisation]. L'article présente les problématiques auxquelles sont confrontés les établissements de santé pour l'installation et le déploiement de leur système d'information en santé. L'émergence d'un marché national suppose de stimuler l'offre et la demande et de procéder à des choix de logiciels. Or de nombreux directeurs d'hôpitaux ne voient pas encore leur intérêt à agir en investissant dans des SI inter et intra-hospitaliers, à la fois interopérables et sécurisés.

Tetard, J. P. (2002). "Les données médicales (image, biologie, diagnostic, soins) et leur mise en réseau, coeur des systèmes d'informations hospitaliers." Techniques Hospitalières(669): 15-16.

[BDSP. Notice produite par ANFH JwdR0xmp. Diffusion soumise à autorisation]. Intervention reprise d'Hopitech 2001 qui pose le problème de la centralisation des informations concernant le malade, d'abord dans les lieux de soins eux-mêmes, puis entre-eux, et propose une vision de l'informatisation hospitalière à 10 ans.

Thabalard, J. C. et Fieschi, M. (2014). "Données de santé : données sensibles." Statistique Et Société 2(2): 67 , tabl., fig.

http://publications-sfds.fr/index.php/stat_soc/article/view/317/297

Ce numéro s'intéresse à l'accès aux données de santé. Ces dernières, parmi lesquelles beaucoup émanent d'un système de sécurité sociale ancien et très organisé, se démultiplient de façon impressionnante – elles semblent assurément « big » aujourd'hui - et qu'en outre elles deviennent de plus en plus aisément accessibles. Mais quelle est la nature exacte de ces données ? Qui y a accès et qui ne devrait pas avoir accès ? Pour quoi faire ? Telles sont les questions auxquels nos auteurs se sont attachés à fournir des éléments de réponse. Ce dossier est accompagné d'un article méthodologique et d'une présentation des débats tenus aux Cafés de la statistique, qui s'avèrent tous les deux liés au sujet du dossier. La méthode multimodale, en plein essor, oblige à évaluer la qualité des données récoltées selon plusieurs modes de collecte, comme le sont très souvent les « big data ». De son côté, le Café de la statistique a traité, sous deux angles différents, des effets sociaux du vieillissement de la population, assurément une question de santé publique. (tiré de l'édito).

Thepot, P., et al. (2008). "Mobilite@CH-Arras. fr : l'information nomade." Revue Hospitalière De France(521): 39-40.

[BDSP. Notice produite par EHESP kHHR0xtl. Diffusion soumise à autorisation]. L'hôpital a migré de l'information sédentaire à l'information nomade. Ouvert en 2007, le nouveau centre hospitalier d'Arras a fait le choix de la mobilité. Architecture physique, système d'information tout IP, outils de communication, workflows et management fonctionnent en synergie. Objectif : une structure plus performante et plus ouverte sur son environnement, où la technologie, placée au service de l'homme, préfigure l'hôpital de demain. Cet article nous présente les points forts du système d'information du CH d'Arras récompensé par le grand prix 2008 des trophées entreprise et société de l'information : meilleur recueil de l'information relative à l'admission des patients avec la décentralisation du service

d'accueil, dématérialisation du dossier administratif, numérisation totale du dossier médical pour le service de gynécologie-obstétrique.

Tixier, F. (2008). "Le portail ville-hôpital des Hospices civils de Beaune." Techniques Hospitalières(711): 53-56, tabl.

[BDSP. Notice produite par EHESP 9R0xplt9. Diffusion soumise à autorisation]. Depuis plusieurs années, les Hospices civils de Beaune s'attachent à mettre le patient au coeur de leur système d'information et de communication. Ils apportent également leur contribution dans la dynamique d'échange et de partage de l'information au sein de leur zone d'attraction. La réalisation du premier portail ville-hôpital, l'un de leurs récents projets, s'inscrit dans cette démarche. Il a été présenté aux professionnels de santé du secteur beauinois (praticiens de ville et hospitalier) en février 2007 à l'hôtel-Dieu où il y a reçu un vif succès et a suscité beaucoup d'intérêt de la part des participants.

Tourron, P. (2017). "La sécurité numérique en environnement hospitalier." Gestions Hospitalières(565): 229-232, fig.

[BDSP. Notice produite par EHESP 77tkR0xp. Diffusion soumise à autorisation]. Face à un environnement complexe et l'apparition de nouveaux risques tels que la cybercriminalité, la gestion de la sécurité numérique devient un enjeu crucial à l'hôpital. Le responsable sécurité du système d'information peut s'appuyer sur les cadres existants (ISO 27001, certification HAS) et devra éclairer les prises de décision en associant et fédérant tous des acteurs des SI à l'hôpital.

Trouessin, G. (2005). "L'hôpital communicant (2ème partie) - Bâtir la confiance dans les systèmes d'information et de communication hospitaliers." Gestions Hospitalières(442): 19-25.

[BDSP. Notice produite par ENSP rP6X2R0x. Diffusion soumise à autorisation]. Dans cet article, l'auteur présente tout d'abord l'évolution réalisée en matière de sécurité des systèmes d'information de santé (SIS) et hospitaliers (SIH) en rappelant notamment les divers travaux et normes réalisés en la matière. Puis, il détaille les tendances essentielles qui se vont jour dans le domaine hospitalier. Ces tendances doivent permettre de bâtir la confiance dans les SIH et touchent à la sécurité à travers différentes notions : innocuité, confidentialité, discrétion, auditabilité.

Tsamo, P. (2010). "Tic et Hôpital. Performance et système d'information." Gestions Hospitalières(495): 256-260, tabl.

[BDSP. Notice produite par EHESP DR0xk8on. Diffusion soumise à autorisation]. La performance d'un établissement de santé se situe dans sa capacité à répondre aux besoins de la santé, à assurer la qualité des soins et à optimiser l'efficacité économique et organisationnelle. Pour répondre à ces enjeux, le système d'information (SI) est un outil essentiel car il permet de mettre à disposition des décideurs des éléments nécessaires à la prise de décision, de coordonner les actions par le traitement de l'information et surtout de dynamiser l'action opérationnelle. À partir de la démarche du centre hospitalier intercommunal des Portes de l'Oise, l'auteur montre comment le SI devient la colonne vertébrale de la coordination des hommes et de surcroît l'outil de management capable de favoriser la mobilisation des équipes autour des projets de transformation pour une prise en charge de qualité, sécurisé, efficace et efficiente. (R.A.).

URMLIF (2000). Guide des réseaux de soins et des systèmes d'information à l'usage du médecin libéral : questions clés, Paris : URMLIF

La modification profonde des besoins de soins observée depuis quelques années, accompagnée de l'évolution du dispositif de prise en charge, entraînent une nécessaire révision des modes d'organisation dans la prise en charge des patients. De plus en plus de médecins, conscients de cette réalité, tentent de s'organiser sur des formes nouvelles, telles que les réseaux de soins. Cet ouvrage est une version courte du "guide des réseaux de soins et des systèmes d'information à l'usage du médecin libéral". Il aborde les questions pratiques liées aux différentes problématiques juridiques soulevées par la mise en œuvre d'un réseau de soins (forme du réseau, modalités d'adhésion et de

sortie...) tout en formulant des propositions et recommandations tenant à la conduite juridique du projet de réseau de soins (contractualisation des liens entre les partenaires, les professionnels de santé et les patients...) et aux conséquences pratiques de ce nouveau mode d'exercice de la médecine en réseau (gestion du dossier médical partagé, informatisation des professionnels de santé...)

URMLIF (2000). Guide des réseaux de soins et des systèmes d'information à l'usage du médecin libéral : texte intégral, Paris : URMLIF

La modification profonde des besoins de soins observée depuis quelques années, accompagnée de l'évolution du dispositif de prise en charge, entraînent une nécessaire révision des modes d'organisation dans la prise en charge des patients. De plus en plus de médecins, conscients de cette réalité, tentent de s'organiser sur des formes nouvelles, telles que les réseaux de soins. Cet ouvrage aborde les questions pratiques liées aux différentes problématiques juridiques soulevées par la mise en œuvre d'un réseau de soins (forme du réseau, modalités d'adhésion et de sortie...) tout en formulant des propositions et recommandations tenant à la conduite juridique du projet de réseau de soins (contractualisation des liens entre les partenaires, les professionnels de santé et les patients...) et aux conséquences pratiques de ce nouveau mode d'exercice de la médecine en réseau (gestion du dossier médical partagé, informatisation des professionnels de santé...)

Vallet, G., et al. (2006). "Technique d'information et de communication. Une charte pour protéger les libertés individuelles." Gestions Hospitalières(454): 193-200.

[BDSP. Notice produite par ENSP YxXWiR0x. Diffusion soumise à autorisation]. L'usage abusif possible, voire frauduleux, de données à caractère personnel suscite depuis longtemps de réelles inquiétudes auprès des personnes amenées à confier des informations privées à des professionnels. L'augmentation de la puissance des technologies mises à disposition de ces mêmes professionnels a ouvert des possibilités de détournement venant conforter légitimement cette inquiétude. L'hôpital doit être un lieu gouverné par la confiance : sans elle, la relation du patient à son médecin, et plus généralement de l'utilisateur à son institution, ne peut que nuire à la qualité du soin. Mais l'hôpital est aussi un lieu de travail collectif et collégial où se côtoient des professionnels de nombreuses disciplines, toutes axées sur une seule ambition : guérir. Voilà pourquoi l'utilisation des technologies d'information et de communication (TIC) et son cortège potentiel d'atteintes à ce capital de confiance est une question qui mérite d'être abordée franchement.

Varin, C., et al. (2012). "Innovation. La tumorothèque à l'heure virtuelle." Gestions Hospitalières(515): 228-229.

[BDSP. Notice produite par EHESP ljsolR0x. Diffusion soumise à autorisation]. Le canceropôle Nord-Ouest a développé un outil informatique commun à quatre régions françaises couvrant un bassin de population de 9 millions de personnes : la tumorothèque virtuelle du canceropôle Nord-Ouest assure aujourd'hui la gestion des échantillons cryopréservés au service des établissements spécialisés dans les soins et la recherche en cancérologie.

Weidmann, C., et al. (2000). "Evaluation des apports de l'informatisation du dossier de soins." Gestions Hospitalières(392): 37-42.

[BDSP. Notice produite par ENSP 1f59RR0x. Diffusion soumise à autorisation]. Depuis juin 1996 a débuté aux hôpitaux universitaires de Strasbourg (HUS) la mise en place progressive d'un dossier de soins informatisé. Cet outil élabore un plan de soins, exhaustif et détaillé. Il permet le recueil de la prescription (avec le prérequis d'une prescription médicale et soignante correcte), ainsi qu'une communication facilitée avec les différents prestataires (laboratoire, pharmacie).

Wlodyka, P. (2012). "Systèmes d'information, stratégie et gouvernance hospitalière." Revue Hospitalière De France(545): 68-71, fig.

[BDSP. Notice produite par EHESP R0x9Er8C. Diffusion soumise à autorisation]. Cet article s'intéresse au rôle du directeur des systèmes d'information (DSI). Au-delà de la composante technique du métier, le directeur doit développer une stratégie propre pour mieux servir l'établissement et doit agir en

force de proposition travaillant en permanence à créer de la valeur, voire même, à développer un volet de politique industrielle.

Wlodyka, P., et al. (2012). "Systèmes d'information en santé. Spécial HIT 2012." Revue Hospitalière De France(545): 68-88.

[BDSP. Notice produite par EHESP BGI98R0x. Diffusion soumise à autorisation]. Cinq points sont développés dans ce dossier consacré au système d'information hospitalier : - le rôle du directeur des systèmes d'information (DSI) - la mesure de la maturité des niveaux d'informatisation des structures de santé à travers notamment l'échelle EMRAM - la procédure d'agrément des hébergeurs de données de santé à caractère personnel par l'Asip - le plan d'action du programme "Hôpital numérique" pour la période 2012-2016 - l'utilisation de smartphones pour sécuriser le circuit des produits de santé en hospitalisation à domicile.

Zorn-Macrez, C. (2010). Données de santé et secret partagé : pour un droit de la personne à la protection de ses données de santé partagées. Nancy Presses Universitaires de Nancy. **Thèse ; Doctorat en Droit privé et sciences criminelles ; Faculté de Droit de Nancy.**: 502 , index.

Le secret partagé est une exception légale au secret professionnel, permettant à ceux qui prennent en charge le patient d'échanger des informations le concernant, sans être sanctionnés du fait de cette révélation d'informations protégées. Si les soignants depuis toujours communiquent au sujet du patient dans son intérêt, il n'y en a pas moins un équilibre à trouver entre l'échange d'informations nécessaire à la pratique médicale, et le respect de la vie privée qu'un partage trop large peu compromettre. Or, l'émergence de l'outil informatique, multipliant les possibilités de partage de données de santé, remet en cause un équilibre fondé sur des mécanismes traditionnels de protection de l'intimité de la personne. Le traitement de données de santé partagées doit alors s'analyser au regard des règles du secret partagé, des règles de la législation "Informatique et Libertés", mais également au jour d'un foisonnement vertigineux de normes relatives à la mise en œuvre de dossiers spécifiques comme le Dossier médical personnel, le Dossier pharmaceutique ou l'Historique des remboursements. La mise en relief systématique de la place du consentement de la personne concernée conduit au constat de l'impérative inscription à la Constitution du droit de la personne à la protection de ses données de santé partagées.

ÉTUDES ETRANGERES

Abbas, A. et Khan, S. U. (2014). "A review on the state-of-the-art privacy-preserving approaches in the e-health clouds." IEEE J Biomed Health Inform **18**(4): 1431-1441.

Cloud computing is emerging as a new computing paradigm in the healthcare sector besides other business domains. Large numbers of health organizations have started shifting the electronic health information to the cloud environment. Introducing the cloud services in the health sector not only facilitates the exchange of electronic medical records among the hospitals and clinics, but also enables the cloud to act as a medical record storage center. Moreover, shifting to the cloud environment relieves the healthcare organizations of the tedious tasks of infrastructure management and also minimizes development and maintenance costs. Nonetheless, storing the patient health data in the third-party servers also entails serious threats to data privacy. Because of probable disclosure of medical records stored and exchanged in the cloud, the patients' privacy concerns should essentially be considered when designing the security and privacy mechanisms. Various approaches have been used to preserve the privacy of the health information in the cloud environment. This survey aims to encompass the state-of-the-art privacy-preserving approaches employed in the e-Health clouds. Moreover, the privacy-preserving approaches are classified into cryptographic and noncryptographic approaches and taxonomy of the approaches is also presented. Furthermore, the strengths and weaknesses of the presented approaches are reported and some open issues are highlighted.

Awang Kalong, N. et Yusof, M. (2017). "Waste in health information systems: a systematic review." Int J Health Care Qual Assur **30**(4): 341-357.

Purpose The purpose of this paper is to discuss a systematic review on waste identification related to health information systems (HIS) in Lean transformation. **Design/methodology/approach** A systematic review was conducted on 19 studies to evaluate Lean transformation and tools used to remove waste related to HIS in clinical settings. **Findings** Ten waste categories were identified, along with their relationships and applications of Lean tool types related to HIS. Different Lean tools were used at the early and final stages of Lean transformation; the tool selection depended on the waste characteristic. Nine studies reported a positive impact from Lean transformation in improving daily work processes. The selection of Lean tools should be made based on the timing, purpose and characteristics of waste to be removed. **Research limitations/implications** Overview of waste and its category within HIS and its analysis from socio-technical perspectives enabled the identification of its root cause in a holistic and rigorous manner. **Practical implications** Understanding waste types, their root cause and review of Lean tools could subsequently lead to the identification of mitigation approach to prevent future error occurrence. **Originality/value** Specific waste models for HIS settings are yet to be developed. Hence, the identification of the waste categories could guide future implementation of Lean transformations in HIS settings.

Baker, L. C., et al. (2013). Expanding Patients' Property Rights In Their Medical Records. NBER Working Paper series : n°20565. Cambridge NBER: 32 , tabl. <http://papers.nber.org/papers/w20565>

Although doctors and hospitals own their patients' medical records, state and federal laws require that they provide patients with a copy at "reasonable cost." We examine the effects of state laws that cap the fees that doctors and hospitals are allowed to charge patients for a copy of their records. We test whether these laws affected patients' propensity to switch doctors and the prices of new- and existing-patient visits. We also examine the effect of laws on hospitals' adoption of electronic medical record (EMR) systems. We find that patients from states adopting caps on copy fees were significantly more likely to switch doctors, and that hospitals in states adopting caps were significantly more likely to install an EMR. We also find that laws did not have a systematic, significant effect on prices.

Bassi, J. et Lau, F. (2013). "Measuring value for money: a scoping review on economic evaluation of health information systems." J Am Med Inform Assoc **20**(4): 792-801.

OBJECTIVE: To explore how key components of economic evaluations have been included in evaluations of health information systems (HIS), to determine the state of knowledge on value for money for HIS, and provide guidance for future evaluations. **MATERIALS AND METHODS:** We searched databases, previously collected papers, and references for relevant papers published from January 2000 to June 2012. For selection, papers had to: be a primary study; involve a computerized system for health information processing, decision support, or management reporting; and include an economic evaluation. Data on study design and economic evaluation methods were extracted and analyzed. **RESULTS:** Forty-two papers were selected and 33 were deemed high quality (scores $\geq 8/10$) for further analysis. These included 12 economic analyses, five input cost analyses, and 16 cost-related outcome analyses. For HIS types, there were seven primary care electronic medical records, six computerized provider order entry systems, five medication management systems, five immunization information systems, four institutional information systems, three disease management systems, two clinical documentation systems, and one health information exchange network. In terms of value for money, 23 papers reported positive findings, eight were inconclusive, and two were negative. **CONCLUSIONS:** We found a wide range of economic evaluation papers that were based on different assumptions, methods, and metrics. There is some evidence of value for money in selected healthcare organizations and HIS types. However, caution is needed when generalizing these findings. Better reporting of economic evaluation studies is needed to compare findings and build on the existing evidence base we identified.

Bassi, J., et al. (2012). "Perceived impact of electronic medical records in physician office practices: a review of survey-based research." Interact J Med Res **1**(2): e3.

BACKGROUND: Physician office practices are increasingly adopting electronic medical records (EMRs). Therefore, the impact of such systems needs to be evaluated to ensure they are helping practices to realize expected benefits. In addition to experimental and observational studies examining objective impacts, the user's subjective view needs to be understood, since ultimate acceptance and use of the system depends on them. Surveys are commonly used to elicit these views. **OBJECTIVE:** To determine which areas of EMR implementation in office practices have been addressed in survey-based research studies, to compare the perceived impacts between users and nonusers for the most-addressed areas, and to contribute to the knowledge regarding survey-based research for assessing the impact of health information systems (HIS). **METHODS:** We searched databases and systematic review citations for papers published between 2000 and 2012 (May) that evaluated the perceived impact of using an EMR system in an office-based practice, were based on original data, had providers as the primary end user, and reported outcome measures related to the system's positive or negative impact. We identified all the reported metrics related to EMR use and mapped them to the Clinical Adoption Framework to analyze the gap. We then subjected the impact-specific areas with the most reported results to a meta-analysis, which examined overall positive and negative perceived impacts for users and nonusers. **RESULTS:** We selected 19 papers for the review. We found that most impact-specific areas corresponded to the micro level of the framework and that appropriateness or effectiveness and efficiency were well addressed through surveys. However, other areas such as access, which includes patient and caregiver participation and their ability to access services, had very few metrics. We selected 7 impact-specific areas for meta-analysis: security and privacy; quality of patient care or clinical outcomes; patient-physician relationship and communication; communication with other providers; accessibility of records and information; business or practice efficiency; and costs or savings. All the results for accessibility of records and information and for communication with providers indicated a positive view. The area with the most mixed results was security and privacy. **CONCLUSIONS:** Users sometimes were likelier than nonusers to have a positive view of the selected areas. However, when looking at the two groups separately, we often found more positive views for most of the examined areas regardless of use status. Despite limitations of a small number of papers and their heterogeneity, the results of this review are promising in terms of finding positive perceptions of EMR adoption for users and nonusers. In addition, we identified issues related to survey-based research for HIS evaluation, particularly regarding constructs for evaluation and quality of study design and reporting.

Baumann, L. A., Baker, J. et Elshaug, A. G. (2018). "The impact of electronic health record systems on clinical documentation times: A systematic review." *Health Policy* **122**(8): 827-836.

BACKGROUND: Effective management of hospital staff time is crucial to quality patient care. Recent years have seen widespread implementation of electronic health record (EHR) systems but the effect of this on documentation time is unknown. This review compares time spent on documentation tasks by hospital staff (physicians, nurses and interns) before and after EHR implementation. **METHODS:** A systematic search identified 8153 potentially relevant citations. Studies examining proportion of total workload spent on documentation with ≥ 40 h of staff observation time were included. Meta-analysis was performed for physicians, nurses and interns comparing pre- and post-EHR results. Studies were weighted by person-hours observation time. **RESULTS:** Twenty-eight studies met selection criteria. Seventeen were pre-EHR, nine post-EHR and two examined both periods. With implementation of EHR, physicians' documentation time increased from 16% (95% confidence interval (CI) 11-22%) to 28% (95% CI 19-37%), nurses from 9% (95% CI 6-12%) to 23% (95% CI 15-32%) and interns from 20% (95% CI 7-32%) to 26% (95% CI 10-42%). **CONCLUSIONS:** There is a lack of long-term follow-up on the effects of EHR implementation. Initial adjustment to EHR appears to increase documentation time but there is some evidence that as staff become more familiar with the system, it may ultimately improve work flow.

Bulow, C., Flagstad Bech, C., Ullitz Faerch, K., Traerup Andersen, J., Byg Armandi, H. et Trelidal, C. (2019). "Discrepancies Between the Medication List in Electronic Prescribing Systems and Patients' Actual Use of Medicines." *Sr Care Pharm* **34**(5): 317-324.

Discrepancies between electronic prescribing systems and patients' actual use of medicines can result in adverse events and medication errors and have serious consequences for the patients. The discrepancies can be identified when performing a thorough medication reconciliation. Computerized

health care systems throughout the Danish health care sector are integrated with the Shared Medication Record (SMR). In the SMR, current medication and medication prescriptions are registered. The aim of this study was to evaluate the number and types of discrepancies between medications listed in the SMR and an updated medication list, obtained through a thorough medication reconciliation, for patients admitted in Danish hospitals. Pharmacists listed the number and type of discrepancies for 412 patients. A total of 1,004 discrepancies were registered, with a mean number of 2.4 medication discrepancies per patient. For 25% (n = 101) of the patients, no discrepancies were found, 20% (n = 86) had one discrepancy, and 16% (n = 66) had five or more discrepancies. More than 50% of the patients had one or more medications in the SMR that the patient did not administer, and 12.6% used medications that were not listed in the SMR. This shows that the SMR should not be used as the only source of information when recording medication history.

Dobrow, M. J., Bytautas, J. P., Tharmalingam, S. et Hagens, S. (2019). "Interoperable Electronic Health Records and Health Information Exchanges: Systematic Review." *JMIR Med Inform* 7(2): e12607.

BACKGROUND: As the availability of interoperable electronic health records (iEHRs) or health information exchanges (HIEs) continues to increase, there is greater need and opportunity to assess the current evidence base on what works and what does not regarding the adoption, use, and impact of iEHRs. **OBJECTIVE:** The purpose of this project is to assess the international evidence base on the adoption, use, and impact of iEHRs. **METHODS:** We conducted a systematic review, searching multiple databases—MEDLINE, Embase, and the Cumulative Index to Nursing and Allied Health Literature (CINAHL)—with supplemental searches conducted in Google Scholar and grey literature sources (ie, Google, Grey Literature Report, and OpenGrey). All searches were conducted in January and February 2017. Articles were eligible for inclusion if they were published in English, were published from 2006 to 2017, and were either an original research study or a literature review. In order to be included, articles needed to focus on iEHRs and HIEs across multiple health care settings, as well as on the impact and effectiveness of iEHR adoption and use. **RESULTS:** We included 130 articles in the synthesis (113 primary studies, 86.9%; 17 reviews, 13.1%), with the majority focused on the United States (88/130, 67.7%). The primary studies focused on a wide range of health care settings; the three most prevalent settings studied included acute care (59/113, 52.2%), primary care (44/113, 38.9%), and emergency departments (34/113, 30.1%). We identified 29 distinct measurement items in the 113 primary studies that were linked to 522 specific measurement outcomes. Productivity and quality were the two evaluation dimensions that received the most attention, accounting for 14 of 29 (48%) measurement items and 306 of 522 (58.6%) measurement outcomes identified. Overall, the majority of the 522 measurement outcomes were positive (298/522, 57.1%). We also identified 17 reviews on iEHR use and impact, 6 (35%) that focused on barriers and facilitators to adoption and implementation and 11 (65%) that focused on benefits and impacts, with the more recent reviews finding little generalizable evidence of benefit and impact. **CONCLUSIONS:** This review captures the status of an evolving and active field focused on the use and impact of iEHRs. While the overall findings suggest many positive impacts, the quality of the primary studies were not evaluated systematically. When broken down by specific measurement item, the results directed attention both to measurement outcomes that were consistently positive and others that were mostly negative or equivocal.

Franklin, B. D. et Puaar, S. (2019). "What is the impact of introducing inpatient electronic prescribing on prescribing errors? A naturalistic stepped wedge study in an English teaching hospital." *Health Informatics J*: 1460458219833112.

Most studies evaluating the impact of electronic prescribing on prescribing safety have used comparatively weak study designs such as uncontrolled before-and-after studies. This study aimed to apply a more robust naturalistic stepped wedge study design to compare the prevalence and types of prescribing errors for electronic prescribing and paper prescribing. Data were collected weekly during a phased electronic prescribing implementation across 20 wards in a large English hospital. We identified 511 (7.8%) erroneous orders in 6523 paper medication orders, and 312 (6.0%) in 5237 electronic prescribing orders. Logistic regression suggested no statistically significant effect of electronic prescribing use or of study week; patient and ward had significant effects. Errors involving incorrect doses and illegible or incomplete orders were less common with electronic prescribing; those involving duplication, omission, incorrect drug and incorrect formulation were more common.

Actions are needed to mitigate these error types; future studies should give more consideration to the effects of patient and ward.

Handayani, P. W., Hidayanto, A. N. et Budi, I. (2018). "User acceptance factors of hospital information systems and related technologies: Systematic review." *Inform Health Soc Care* **43**(4): 401-426.

This study reviews the literature on the most important acceptance factors associated with Hospital Information Systems (HIS) and related technologies based on user groups' perspectives (medical staff, hospital management, administrative personnel, patient, medical student, and IT staff), which can assist researchers and hospital management to develop suitable acceptance models to improve the quality of HIS. We conducted searches in online databases with large repositories of academic studies, written in English and fully accessible by the authors. The articles being reviewed are related to health information technology (HIT), clinical information systems (CIS), HIS, electronic medical records (EMR), telemedicine or telehealth, picture archiving and communication systems (PACS), radio frequency identification (RFID), and computerized physician order entry (CPOE), where the use of most of those applications and technologies is highly integrated. A predefined string was used to extract 1,005 articles, and the results were reviewed and checked. The results of this study found 15 user acceptance factors related to HIS and related technologies that were frequently identified by a minimum of five previous studies. These factors were related to individual, technological, and organizational factors. In addition, HIS and related technologies' user acceptance factors in each user group describe different results.

Huang, M. Z., Gibson, C. J. et Terry, A. L. (2018). "Measuring Electronic Health Record Use in Primary Care: A Scoping Review." *Appl Clin Inform* **9**(1): 15-33.

BACKGROUND: Simple measures of electronic health record (EHR) adoption may be inadequate to evaluate EHR use; and positive outcomes associated with EHRs may be better gauged when varying degrees of EHR use are taken into account. In this article, we aim to assess the current state of the literature regarding measuring EHR use. **OBJECTIVE:** This article conducts a scoping review of the literature to identify and classify measures of primary care EHR use with a focus on the Canadian context. **METHODS:** We conducted a scoping review. Multiple citation databases were searched, as well as gray literature from relevant Web sites. Resulting abstracts were screened for inclusion. Included full texts were reviewed by two authors. Data from the articles were extracted; we synthesized the findings. Subsequently, we reviewed these results with seven EHR stakeholders in Canada. **RESULTS:** Thirty-seven articles were included. Eighteen measured EHR function use individually, while 19 incorporated an overall level of use. Eight frameworks for characterizing overall EHR use were identified. **CONCLUSION:** There is a need to create standardized frameworks for assessing EHR use.

Isaac, T., Rosenthal, M. B., Colla, C. H., Morden, N. E., Mainor, A. J., Li, Z., Nguyen, K. H., Kinsella, E. A. et Sequist, T. D. (2018). "Measuring overuse with electronic health records data." *Am J Manag Care* **24**(1): 19-25.

OBJECTIVES: To measure overuse of low-value care using electronic health record (EHR) data and manual chart review and to evaluate whether certain low-value services are better captured using EHR data. **STUDY DESIGN:** We implemented algorithms to extract performance on 13 Choosing Wisely-identified healthcare services using EHR data at a large physician practice group between 2011 and 2013. **METHODS:** We calculated rates of overuse using automated EHR extracts. We manually reviewed the charts for 200 cases of overuse for each measure to determine if they had clinical risk factors that could explain use of the low-value service and then calculated adjusted rates of overuse. We explored trends in overuse for each low-value service in the 3-year duration using logistic regression. **RESULTS:** Unadjusted rates of overuse ranged from 0.2% to 92%. Automated EHR extracts and manual chart review identified explanatory risk factors for most measures, although the magnitude varied: for some measures (eg, bone densitometry exam for women younger than 65 years), manual chart review did not identify many additional risks (3.0%). In contrast, in patients who had sinus computed tomography or an antibiotic prescription for uncomplicated acute rhinosinusitis, manual chart review identified more explanatory risk factors (22.5%) than the automated EHR extract (9.5%). Adjusted rates of overuse ranged from 0.2% to 61.9%. Eight services demonstrated a statistically significant decrease in overuse over 3 years, while 1 increased significantly. **CONCLUSIONS:** The use of EHR data, both extracted and manually abstracted, provides an opportunity to more accurately and reliably identify overuse of low-value healthcare services.

Kumar, M. et Mostafa, J. (2019). "Research evidence on strategies enabling integration of electronic health records in the health care systems of low- and middle-income countries: A literature review." *Int J Health Plann Manage* **34**(2): e1016-e1025.

Integration of electronic health records (EHRs) in the national health care systems of low- and middle-income countries (LMICs) is vital for achieving the United Nations Sustainable Development Goal of ensuring healthy lives and promoting well-being for all people of all ages. National EHR systems are increasing, but mostly in developed countries. Besides, there is limited research evidence on successful strategies for ensuring integration of national EHRs in the health care systems of LMICs. To fill this evidence gap, a comprehensive survey of literature was conducted using scientific electronic databases- PubMed, SCOPUS, Web of Science, and Global Health- and consultations with international experts. The review highlights the lack of evidence on strategies for integrating EHR systems, although there was ample evidence on implementation challenges and relevance of EHRs to vertical disease programs such as HIV. The findings describe the narrow focus of EHR implementation, the prominence of vertical disease programs in EHR adoption, testing of theoretical and conceptual models for EHR implementation and success, and strategies for EHR implementation. The review findings are further amplified through examples of EHR implementation in Sierra Leone, Malawi, and India. Unless evidence-based strategies are identified and applied, integration of national EHRs in the health care systems of LMICs is difficult.

Lin, J. et Olson, M. K. (2019). Does Health IT Save Money and Lives? New Evidence from Vendor Heterogeneity ? Tulane Tulane University: 55.

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3341796

We examine how vendor heterogeneity and the timing of adoption affect EMR performance in U.S. hospitals. Although government has invested billions to incentivize health information technology, there is little evidence showing that it is producing the anticipated effects. Based on a national sample and an IV approach, we find that the impact of EMR adoption on Medicare payments and 30-day mortality varies substantially by vendor. Not all certified EMRs lead to cost savings and/or improved outcomes. Our results suggest that vendor difference matters and offer evidence to help inform the policy debate over government incentive programs for health IT adoption.

McLeod, M., Karampatakis, G. D., Heyligen, L., McGinley, A. et Franklin, B. D. (2019). "The impact of implementing a hospital electronic prescribing and administration system on clinical pharmacists' activities - a mixed methods study." *BMC Health Serv Res* **19**(1): 156.

BACKGROUND: The increasing adoption of hospital electronic prescribing and medication administration (ePA) systems has driven a wealth of research around the impact on patient safety. Yet relatively little research has sought to understand the effects on staff, particularly pharmacists. We aimed to investigate the effects of ePA on pharmacists' activities, including interactions with patients and health professionals, and their perceptions of medication safety risks. **METHODS:** A mixed methods study comprising quantitative direct observations of ward pharmacists before and after implementation of ePA in an English hospital, and semi-structured interviews post-ePA. Quantitative data comprised multi-dimensional work activity sampling to establish the proportion of time ward pharmacists spent on different tasks, with whom and where. These data were extrapolated to estimate task duration. Qualitative interviews with pharmacists explored perceived impact on (i) ward activities, (ii) interactions with patients and different health professionals, (iii) locations where tasks were carried out, and (iv) medication errors. **RESULTS:** Observations totalled 116 h and 50 min. Task duration analysis suggested screening inpatient medication increased by 16 mins per 10 patients reviewed ($p = 0.002$), and searching for paper drug charts or computer decreased by 2 mins per 10 patients reviewed ($p = 0.001$). Pharmacists mainly worked alone (58% of time pre- and 65% post-ePA, $p = 0.17$), with patient interactions reducing from 5 to 2% of time ($p = 0.03$). Seven main themes were identified from the interviews, underpinned by a core explanatory concept around the enhanced and shifting role of the ward pharmacist post-ePA. Pharmacists perceived there to be a number of valuable safety features with ePA. However, paradoxically, some of these may have also inadvertently contributed to medication errors. **CONCLUSION:** This study provides quantitative and qualitative insights into the effects of implementing ePA on ward pharmacists' activities. Some tasks took longer while others reduced, and pharmacists may spend less time with patients with ePA. Pharmacists

valued a number of safety features associated with ePA but also perceived an overall increase in medication risk. Pharmacy staff demonstrated a degree of resilience to ensure 'business as usual' by enhancing and adapting their role.

Mehta, N. et Pandit, A. (2018). "Concurrence of big data analytics and healthcare: A systematic review." *Int J Med Inform* **114**: 57-65.

BACKGROUND: The application of Big Data analytics in healthcare has immense potential for improving the quality of care, reducing waste and error, and reducing the cost of care. **PURPOSE:** This systematic review of literature aims to determine the scope of Big Data analytics in healthcare including its applications and challenges in its adoption in healthcare. It also intends to identify the strategies to overcome the challenges. **DATA SOURCES:** A systematic search of the articles was carried out on five major scientific databases: ScienceDirect, PubMed, Emerald, IEEE Xplore and Taylor & Francis. The articles on Big Data analytics in healthcare published in English language literature from January 2013 to January 2018 were considered. **STUDY SELECTION:** Descriptive articles and usability studies of Big Data analytics in healthcare and medicine were selected. **DATA EXTRACTION:** Two reviewers independently extracted information on definitions of Big Data analytics; sources and applications of Big Data analytics in healthcare; challenges and strategies to overcome the challenges in healthcare. **RESULTS:** A total of 58 articles were selected as per the inclusion criteria and analyzed. The analyses of these articles found that: (1) researchers lack consensus about the operational definition of Big Data in healthcare; (2) Big Data in healthcare comes from the internal sources within the hospitals or clinics as well external sources including government, laboratories, pharma companies, data aggregators, medical journals etc.; (3) natural language processing (NLP) is most widely used Big Data analytical technique for healthcare and most of the processing tools used for analytics are based on Hadoop; (4) Big Data analytics finds its application for clinical decision support; optimization of clinical operations and reduction of cost of care (5) major challenge in adoption of Big Data analytics is non-availability of evidence of its practical benefits in healthcare. **CONCLUSION:** This review study unveils that there is a paucity of information on evidence of real-world use of Big Data analytics in healthcare. This is because, the usability studies have considered only qualitative approach which describes potential benefits but does not take into account the quantitative study. Also, majority of the studies were from developed countries which brings out the need for promotion of research on Healthcare Big Data analytics in developing countries.

OCDE (2019). Using routinely collected data to inform pharmaceuticals policies : analytical report for OECD and UE countries. Paris OCDE: 104 , tab., graph., fig.

https://ec.europa.eu/newsroom/dae/redirection.cfm?item_id=646762&newsletter=261&lang=fr

This report provides an overview of patient-level data on medicines routinely collected in health systems from administrative sources, e.g. pharmacy records, electronic health records and insurance claims. In total 26 OECD and European Union member countries responded to a survey addressing the availability and accessibility of routinely collected data on medicines and their applicability to developing evidence. The report further explores the utility of evidence from clinical practice, looking at experiences and initiatives across the OECD and EU.

Puaar, S. J. et Franklin, B. D. (2018). "Impact of an inpatient electronic prescribing system on prescribing error causation: a qualitative evaluation in an English hospital." *BMJ Qual Saf* **27**(7): 529-538.

BACKGROUND: Few studies have applied a systems approach to understanding the causes of specific prescribing errors in the context of hospital electronic prescribing (EP). A comprehensive understanding of underlying causes is essential for developing effective interventions to improve prescribing safety. Our objectives were to explore prescribers' perspectives of the causes of errors occurring with EP and to make recommendations to maximise benefits and minimise risks. **METHODS:** We studied a large hospital using inpatient EP. From April to June 2016, semistructured interviews were conducted with purposively sampled prescribers involved with a prescribing error. Interviews explored prescribers' perceived causes of the error and views about EP; they were audio-recorded and transcribed verbatim. Data were thematically analysed against a framework based on Reason's accident causation model, with a focus on identifying latent conditions. **RESULTS:** Twenty-five interviews explored causes of 32 errors. Slips and rule-based mistakes were the most common active

failures. Error causation was multifactorial; environmental, individual, team, task and technology error-producing conditions were all influenced by EP. There were three broad groups of latent conditions: the EP system's functionality and design; the organisation's decisions around EP implementation and use; and prescribing behaviours in the context of EP. CONCLUSIONS: Errors were associated with the design of EP itself and its integration within the healthcare environment. Findings suggest that EP vendors should focus on revolutionising interface design and usability issues, bearing in mind the wider healthcare context in which such software is used. Healthcare organisations should draw upon human factors principles when implementing EP. Consideration of work environment, infrastructure, training, prescribing responsibilities and behaviours should be considered to address local issues identified.

Sadoughi, F., Nasiri, S. et Ahmadi, H. (2018). "The impact of health information exchange on healthcare quality and cost-effectiveness: A systematic literature review." *Comput Methods Programs Biomed* **161**: 209-232.

BACKGROUND AND OBJECTIVE: Health Information Exchange (HIE) is known as a technology that electronically shares all clinical and administrative data throughout healthcare settings. Despite this technology has a great potential in the healthcare industry, there is a limited and sparse evidence of articles which illustrated the impact of HIE on quality of care and cost-effectiveness. This work presents a systematic review that evaluates the impact of HIE on quality and cost-effectiveness, and the rates of HIE adoption and participation in healthcare organizations. METHODS: We systematically searched all English papers that were indexed in four major databases (Science Direct, PubMed, IEEE and Web of Science) between 2005 and 2016. Consequently, 32 identified papers appeared in 21 international journals and conferences. Eligible studies independently were critically appraised, collected within data extraction form and then thematically analyzed by two reviewers and if necessary, the third author. The selected papers have been classified based on 11 main categories including publication year, journal and conference names, country and study design, types of data exchanged, healthcare levels, disease or disorder, participants in organizations and individuals, settings characteristics and HIE types, the impact of HIE on quality and cost-effectiveness, and the rates of HIE adoption and participation. RESULTS: Of the 32 articles, 25 studies investigated the financial and clinical impact of HIE. Overwhelmingly, HIE studies have reported positive findings for quality and cost-effectiveness of care. 15 of HIE studies (60%) demonstrated positive financial effects and 16 studies (64%) reported positive effects on quality improvement of patient care. However, the overall quality of the evidences was low. In this regard, cohort study (59.38%) was the most common used study design. Nine studies presented the rates of HIE adoption and participation. The lowest and highest participation rates were 15.7% and 79%, respectively. CONCLUSIONS: HIE can be considered as a superior potential for healthcare information system, resulting to promote patient care quality and reduce costs related to resource utilization. However, further researches are needed in order to provide a better understanding of this domain and accordingly attain new opportunities to increase users' participation and motivation for successfully adopting this technology.

Sun, W., Cai, Z., Li, Y., Liu, F., Fang, S. et Wang, G. (2018). "Data Processing and Text Mining Technologies on Electronic Medical Records: A Review." *J Healthc Eng* **2018**: 4302425.

Currently, medical institutes generally use EMR to record patient's condition, including diagnostic information, procedures performed, and treatment results. EMR has been recognized as a valuable resource for large-scale analysis. However, EMR has the characteristics of diversity, incompleteness, redundancy, and privacy, which make it difficult to carry out data mining and analysis directly. Therefore, it is necessary to preprocess the source data in order to improve data quality and improve the data mining results. Different types of data require different processing technologies. Most structured data commonly needs classic preprocessing technologies, including data cleansing, data integration, data transformation, and data reduction. For semistructured or unstructured data, such as medical text, containing more health information, it requires more complex and challenging processing methods. The task of information extraction for medical texts mainly includes NER (named-entity recognition) and RE (relation extraction). This paper focuses on the process of EMR processing and emphatically analyzes the key techniques. In addition, we make an in-depth study on the applications developed based on text mining together with the open challenges and research issues for future work.

Tan, Y., Elliott, R. A., Richardson, B., Tanner, F. E. et Dorevitch, M. I. (2018). "An audit of the accuracy of medication information in electronic medical discharge summaries linked to an electronic prescribing system." *Health Inf Manag* **47**(3): 125-131.

BACKGROUND: Poor communication of medication information to general practitioners when patients are discharged from hospital is a widely recognised problem. There has been little research exploring the accuracy of medication information in electronic discharge summaries (EDS) linked to hospital e-prescribing systems. **OBJECTIVE:** To evaluate the accuracy of medication lists and medication change information in EDS produced using an integrated e-prescribing and EDS system (where EDS discharge medication lists were imported from discharge e-prescription records, medication change information was manually entered, and medications were dispensed from paper copies of the patients' e-prescriptions). **METHOD:** Retrospective audit of EDSs for a random sample, representative of adult patients (n = 87) discharged from a major teaching hospital. EDS medication lists were compared to pharmacist-verified paper discharge prescriptions (considered to be the most accurate discharge medication list) to identify discrepancies. EDS medication change information was compared to medication changes identified by comparing pharmacist-verified "Medication History on Admission" forms with pharmacist-verified paper discharge prescriptions. **RESULTS:** There were 85/87 (98%) EDSs that included a discharge medication list. Of these, 50/85 (59%) contained one or more medication list discrepancies (median 1, range 0-15). The most common discrepancy was omission of medication (58%); 84/131 (64%) discrepancies were considered clinically significant (risk of adverse outcome); 162/351 (46%) clinically significant medication changes were stated in the EDS; and 153/351 (44%) changes were both stated and included a reason. **CONCLUSION:** EDS discrepancies were common despite integration with e-prescribing. Eliminating paper prescriptions, enhancing e-prescribing/EDS functionality and involving pharmacists in EDS preparation may reduce discrepancies.

Xiao, C., Choi, E. et Sun, J. (2018). "Opportunities and challenges in developing deep learning models using electronic health records data: a systematic review." *J Am Med Inform Assoc* **25**(10): 1419-1428.

Objective: To conduct a systematic review of deep learning models for electronic health record (EHR) data, and illustrate various deep learning architectures for analyzing different data sources and their target applications. We also highlight ongoing research and identify open challenges in building deep learning models of EHRs. **Design/method:** We searched PubMed and Google Scholar for papers on deep learning studies using EHR data published between January 1, 2010, and January 31, 2018. We summarize them according to these axes: types of analytics tasks, types of deep learning model architectures, special challenges arising from health data and tasks and their potential solutions, as well as evaluation strategies. **Results:** We surveyed and analyzed multiple aspects of the 98 articles we found and identified the following analytics tasks: disease detection/classification, sequential prediction of clinical events, concept embedding, data augmentation, and EHR data privacy. We then studied how deep architectures were applied to these tasks. We also discussed some special challenges arising from modeling EHR data and reviewed a few popular approaches. Finally, we summarized how performance evaluations were conducted for each task. **Discussion:** Despite the early success in using deep learning for health analytics applications, there still exist a number of issues to be addressed. We discuss them in detail including data and label availability, the interpretability and transparency of the model, and ease of deployment.

Barbatis, C. G., et al. (2009). "Linked electronic medication systems in community pharmacies for preventing pseudoephedrine diversion: a review of international practice and analysis of results in Australia." *Drug Alcohol Rev* **28**(6): 586-591.

INTRODUCTION AND AIMS: Pseudoephedrine is a precursor often diverted into the illegal manufacture of amphetamine type substances (ATS). The aim of this study was to evaluate the effectiveness of a linked electronic medication recording system (LEMS) established in Australian pharmacies in 2005 for preventing the diversion of pseudoephedrine. **DESIGN AND METHODS:** The number of illegal ATS laboratories detected in each jurisdiction of Australia from 1996-1997 to 2004-2005 were analysed by linear regression nationally and by each jurisdiction. The statistical significance of seizures in 2005-2006 was based on the comparison of the observed value to the 95% prediction confidence intervals calculated from the historical data for each jurisdiction and nationally. **RESULTS:**

Pharmacies in Queensland commenced an LEMS in late 2005 to minimise retail pseudoephedrine diversion. The number of ATS laboratories seized in 2005-2006 in Queensland was significantly lower ($P < 0.05$) than predicted by historical data. For all other jurisdictions and nationally the totals of laboratories seized in 2005-2006 were not significantly different from predicted values. **DISCUSSION AND CONCLUSIONS:** The significant decline in ATS illegal laboratories seized in Queensland in 2005-2006 suggests the effective use of LEMS in pharmacies to minimise pseudoephedrine diversion. In order to evaluate a national LEMS, more frequent data on numbers of linked pharmacies, ATS laboratories seized and indicators of pseudoephedrine sales and misuse are required. Testing the use of LEMS by pharmacies for preventing the diversion of other medicines seems appropriate.

Berchet, C. et Nader, C. (2016). The organisation of out-of hours primary care in OECD countries. *OECD Health Working Papers* ; 89. Paris OCDE: 44 , tab., fig.

http://www.oecd-ilibrary.org/social-issues-migration-health/the-organisation-of-out-of-hours-primary-care-in-oecd-countries_5jlr3czbqw23-en

Out-of-hours (OOH) services provide urgent primary care when primary care physician (PCP) offices are closed, most often from 5pm on weekdays and all day on weekends and holidays. Based on a policy survey (covering 27 OECD countries) and the existing literature, the working paper describes the current challenges associated with the organisation of OOH primary care and reviews the existing models of delivering OOH primary care. The paper pays particular attention to policies which have been pursued to improve access and quality of OOH primary care. Findings of the paper show that most OECD health systems report key challenges to provide OOH primary care in an accessible and safe way. These challenges relate to (i) PCPs' reluctance to practise due to high workload and insufficient remuneration; and (ii) geographical variations in access to OOH primary care within each health system. Together these challenges are leading sources of inappropriate hospital emergency department (ED) visits. Results also indicate that several models of OOH primary care exist alongside each other in the 27 OECD countries participating in the policy survey. Hospital EDs, rota groups and practice-based services remain the most common OOH arrangements, but there is a tendency to shift OOH primary care towards primary care centres and large-scale organisations known as general practice cooperatives (GPCs). A range of solutions have been implemented to improve access and quality of OOH primary care across OECD countries. These include providing organisational and financial support to PCPs; using other health care professionals (such as nurse practitioners), making OOH care participation compulsory, setting up a telephone triage system, using new technologies, and developing rich information systems (résumé des auteurs)

Bhuyan, S. S., et al. (2014). "Do service innovations influence the adoption of electronic health records in long-term care organizations? Results from the U.S. National Survey of Residential Care Facilities." *Int J Med Inform* **83**(12): 975-982.

OBJECTIVE: Healthcare organizations including residential care facilities (RCFs) are diversifying their services to meet market demands. Service innovations have been linked to the changes in the way that healthcare organizations organize their work. The objective of this study is to explore the relationship between organizational service innovations and Electronic Health Record (EHR) adoption in the RCFs. **METHODS:** We used the data from the 2010 National Survey of Residential Care Facilities conducted by the Centers for Disease Control and Prevention. The outcome was whether an RCF adopted EHR or not, and the predictors were the organizational service innovations including provision of skilled nursing care and medication review. We also added facility characteristics as control variables. Weighted multivariate logistic regressions were used to estimate the relationship between service innovation factors and EHR adoption in the RCFs. **RESULTS:** In 2010, about 17.4% of the RCFs were estimated to use EHR. Multivariate analysis showed that RCFs employing service innovations were more likely to adopt EHR. The residential care facilities that provide skilled nursing services to their residents are more likely (OR: 1.42; 95% CI: 1.09-1.87) to adopt EHR. Similarly, RCFs with a provision of medication review were also more likely to adopt EHR (OR: 1.40; 95% CI: 1.00-1.95). Among the control variables, facility size, chain affiliation, ownership type, and Medicaid certification were significantly associated with EHR adoption. **CONCLUSIONS:** Our findings suggest that service innovations may drive EHR adoption in the RCFs in the United States. This can be viewed as a strategic attempt by RCFs to engage in a new business arrangement with hospitals and other health

care organizations, where quality of care and interoperability of patients' records might play a vital role under the current healthcare reform. Future research could examine the relationship between service innovations and use of different EHR functionality in RCFs.

Biro, S., et al. (2016). "Utility of linking primary care electronic medical records with Canadian census data to study the determinants of chronic disease: an example based on socioeconomic status and obesity." *BMC Med Inform Decis Mak* **16**: 32.

BACKGROUND: Electronic medical records (EMRs) used in primary care contain a breadth of data that can be used in public health research. Patient data from EMRs could be linked with other data sources, such as a postal code linkage with Census data, to obtain additional information on environmental determinants of health. While promising, successful linkages between primary care EMRs with geographic measures is limited due to ethics review board concerns. This study tested the feasibility of extracting full postal code from primary care EMRs and linking this with area-level measures of the environment to demonstrate how such a linkage could be used to examine the determinants of disease. The association between obesity and area-level deprivation was used as an example to illustrate inequalities of obesity in adults. **METHODS:** The analysis included EMRs of 7153 patients aged 20 years and older who visited a single, primary care site in 2011. Extracted patient information included demographics (date of birth, sex, postal code) and weight status (height, weight). Information extraction and management procedures were designed to mitigate the risk of individual re-identification when extracting full postal code from source EMRs. Based on patients' postal codes, area-based deprivation indexes were created using the smallest area unit used in Canadian censuses. Descriptive statistics and socioeconomic disparity summary measures of linked census and adult patients were calculated. **RESULTS:** The data extraction of full postal code met technological requirements for rendering health information extracted from local EMRs into anonymized data. The prevalence of obesity was 31.6 %. There was variation of obesity between deprivation quintiles; adults in the most deprived areas were 35 % more likely to be obese compared with adults in the least deprived areas (Chi-Square = 20.24(1), $p < 0.0001$). Maps depicting spatial representation of regional deprivation and obesity were created to highlight high risk areas. **CONCLUSIONS:** An area based socioeconomic measure was linked with EMR-derived objective measures of height and weight to show a positive association between area-level deprivation and obesity. The linked dataset demonstrates a promising model for assessing health disparities and ecological factors associated with the development of chronic diseases with far reaching implications for informing public health and primary health care interventions and services.

Blobel, B., et al. (2001). "Enhanced security services for enabling pan-European healthcare networks." *Stud Health Technol Inform* **84**(Pt 2): 1234-1238.

Establishing the Shared Care environment, communication and co-operation between healthcare establishments involved must be provided in a trustworthy way. This challenge is even more important for health networks using the Internet. In that context, services assuring both communication security and application security must be provided. Especially in the e-health environment, additionally to identity-related services certifying data or properties of principals, trustworthiness or authorisation for objects, components and functions must be established by Trusted Third Parties (TTP). Within the European Commission's Information Society Technologies (IST) Programme, the HARP project provides the "HARP Cross-Security Platform (HCSP)" needed in the open Web environment of pan-European networks. The solutions are under implementation and evaluation in the German ONCONET enabling a trustworthy framework for both health professionals and patients as well as supporting clinical studies.

Bolle, S., et al. (2015). "Online Health Information Tool Effectiveness for Older Patients: A Systematic Review of the Literature." *J Health Commun* **20**(9): 1067-1083.

Online health information tools (OHITs) have been found to be effective in improving health outcomes. However, the effectiveness of these tools for older patients has been far from clear. This systematic literature review therefore provides an overview of online health information tool effectiveness for older patients using a two-dimensional framework of OHIT functions (i.e., providing

information, enhancing information exchange, and promoting self-management) and outcomes (i.e., immediate, intermediate, and long-term outcomes). Comprehensive searches of the PubMed, EMBASE, and PsycINFO databases are conducted to identify eligible studies. Articles describing outcomes of patient-directed OHITs in which a mean sample or subgroup of age ≥ 65 years was used are included in the literature review. A best evidence synthesis analysis provides evidence that OHITs improve self-efficacy, blood pressure, hemoglobin levels, and cholesterol levels. Limited evidence is found in support of OHIT effects on knowledge, perceived social support, health service utilization, glycemic control, self-care adherence, exercise performance, endurance, and quality of life. OHITs seem promising tools to facilitate immediate, intermediate, and long-term outcomes in older patients by providing information, enhancing information exchange, and promoting self-management. However, future studies should evaluate the effectiveness of OHITs for older patients to achieve stronger levels of evidence.

Bonhomme, C. (2013). "Au Danemark, un dossier patient informatisé de territoire." *Revue Hospitaliere De France*(550): 20-22.

[BDSP. Notice produite par EHESP mm9R0xmC. Diffusion soumise à autorisation]. La région danoise de Midtjylland investit environ 40 euros par habitant chaque année dans le développement de ses systèmes d'information en santé. Autant dire qu'avec 1,2 million d'habitants, la deuxième région du royaume se positionne en pointe dans un secteur à forte croissance. Son dossier patient informatisé est considéré comme l'un des plus aboutis du Danemark. Ses huit mille utilisateurs territoriaux - professionnels de ville et hospitaliers-bénéficient d'une plateforme d'échanges sur réseau social.

Bonhomme, C. (2014). "Cinq questions à Gilles Babinet : Digital champion français auprès de la Commission européenne." *Revue Hospitaliere De France*(559): 54-55.

[BDSP. Notice produite par EHESP D8R0xIFr. Diffusion soumise à autorisation]. Gilles Babinet a été nommé "Digital champion" et représente, à ce titre, la France auprès de la Commission européenne pour les enjeux du numérique. Auteur de deux ouvrages, il identifie cinq domaines intrinsèquement liés au numérique : la connaissance, l'éducation, la santé, l'industrialisation/production et l'Etat.

Boonstra, A., et al. (2014). "Implementing electronic health records in hospitals: a systematic literature review." *BMC Health Serv Res* **14**: 370.

BACKGROUND: The literature on implementing Electronic Health Records (EHR) in hospitals is very diverse. The objective of this study is to create an overview of the existing literature on EHR implementation in hospitals and to identify generally applicable findings and lessons for implementers. **METHODS:** A systematic literature review of empirical research on EHR implementation was conducted. Databases used included Web of Knowledge, EBSCO, and Cochrane Library. Relevant references in the selected articles were also analyzed. Search terms included Electronic Health Record (and synonyms), implementation, and hospital (and synonyms). Articles had to meet the following requirements: (1) written in English, (2) full text available online, (3) based on primary empirical data, (4) focused on hospital-wide EHR implementation, and (5) satisfying established quality criteria. **RESULTS:** Of the 364 initially identified articles, this study analyzes the 21 articles that met the requirements. From these articles, 19 interventions were identified that are generally applicable and these were placed in a framework consisting of the following three interacting dimensions: (1) EHR context, (2) EHR content, and (3) EHR implementation process. **CONCLUSIONS:** Although EHR systems are anticipated as having positive effects on the performance of hospitals, their implementation is a complex undertaking. This systematic review reveals reasons for this complexity and presents a framework of 19 interventions that can help overcome typical problems in EHR implementation. This framework can function as a reference for implementers in developing effective EHR implementation strategies for hospitals.

Brennan, J., et al. (2015). "National Health Models and the Adoption of E-Health and E-Prescribing in Primary Care - New Evidence from Europe." *J Innov Health Inform* **22**(4): 399-408.

OBJECTIVE: Recent research from the European Commission (EC) suggests that the development and adoption of eHealth in primary care is significantly influenced by the context of the national health model in operation. This research identified three national health models in Europe at this time - the National Health Service (NHS) model, the social insurance system (SIS) model and the transition country (TC) model, and found a strong correlation between the NHS model and high adoption rates for eHealth. The objective of this study is to establish if there is a similar correlation in one specific application area - electronic prescribing (ePrescribing) in primary care. **METHODS:** A review of published literature from 2000 to 2014 was undertaken covering the relevant official publications of the European Union and national government as well as the academic literature. An analysis of the development and adoption of ePrescribing in Europe was extracted from these data. **RESULTS:** The adoption of ePrescribing in primary care has increased significantly in recent years and is now practised by approximately 32% of European general practitioners. National ePrescribing services are now firmly established in 11 countries, with pilot projects underway in most others. The highest adoption rates are in countries with the NHS model, concentrated in the Nordic area. The electronic transmission of prescriptions continues to pose a significant challenge, especially in SIS countries and TCs. **CONCLUSIONS:** There is a strong correlation between the NHS model and high adoption rates for ePrescribing similar to the EC findings on the adoption of eHealth. It may be some time before many SIS countries and TCs reach the same adoption levels for ePrescribing and eHealth in primary care as most NHS countries.

Bruun-Rasmussen, M., et al. (2003). "Collaboration--a new IT-service in the next generation of regional health care networks." *Int J Med Inform* **70**(2-3): 205-214.

During the past 10-15 years, Regional Health Care Networks (RHCN) have been established in many regions throughout the world. RHCN build on well-known techniques, methodologies and appropriate standards. Most of the European Countries today have set up IT strategic plans that focus on the establishment of RHCN. The benefits of having access to all relevant information are tremendous and contribute to cost-effective and coherent health services. By the rapid spread and use of Internet, technology has made it possible to interconnect all kinds of applications. In 2000, the most experienced regions in Europe joined PICNIC, a European project to develop the Next Generation Regional Health Care Networks and to support their new ways of providing health and social care. The previous generation of Regional Health Care Networks supported the interconnection of applications by transfer of messages. Messaging is an effective means of integration for isolated high-specialised systems that only need to exchange data. This service will continue to be one of the most important services in the future health care networks. However, tighter coupling may be desirable in some instances to avoid replicating the same functionality in several applications. In other words, certain services can be common and used by a number of applications instead of building that service inside each application. These common services are called middleware services. In PICNIC (<http://www.medcom.dk/picnic>), a new middleware Collaboration IT service has been identified and developed. This service allows the end users to perform real-time clinical collaboration, with exchange of text, structured data, voice and images across the limits of a single region. A clinical collaboration is associated with the shared clinical context to provide a record of relevant clinical information and facilitates synchronous as well as asynchronous collaboration. This new IT service builds on the increasing popularity of instance messaging and presence systems that facilitate smooth transition between synchronous and asynchronous interaction. The new Collaboration IT service is expected to have a strong impact on the practice of health care in the next generation of Regional Health Care Networks.

Carrion Senor, I., et al. (2012). "[Access control management in electronic health records: a systematic literature review]." *Gac Sanit* **26**(5): 463-468.

OBJECTIVE: This study presents the results of a systematic literature review of aspects related to access control in electronic health records systems, wireless security and privacy and security training for users. **METHODS:** Information sources consisted of original articles found in Medline, ACM Digital Library, Wiley InterScience, IEEE Digital Library, Science@Direct, MetaPress, ERIC, CINAHL and Trip Database, published between January 2006 and January 2011. A total of 1,208 articles were extracted using a predefined search string and were reviewed by the authors. The final selection consisted of 24

articles. RESULTS: Of the selected articles, 21 dealt with access policies in electronic health records systems. Eleven articles discussed whether access to electronic health records should be granted by patients or by health organizations. Wireless environments were only considered in three articles. Finally, only four articles explicitly mentioned that technical training of staff and/or patients is required. CONCLUSION: Role-based access control is the preferred mechanism to deploy access policy by the designers of electronic health records. In most systems, access control is managed by users and health professionals, which promotes patients' right to control personal information. Finally, the security of wireless environments is not usually considered. However, one line of research is eHealth in mobile environments, called mHealth.

Castillo, V. H., et al. (2010). "A knowledge-based taxonomy of critical factors for adopting electronic health record systems by physicians: a systematic literature review." *BMC Med Inform Decis Mak* **10**: 60.

BACKGROUND: The health care sector is an area of social and economic interest in several countries; therefore, there have been lots of efforts in the use of electronic health records. Nevertheless, there is evidence suggesting that these systems have not been adopted as it was expected, and although there are some proposals to support their adoption, the proposed support is not by means of information and communication technology which can provide automatic tools of support. The aim of this study is to identify the critical adoption factors for electronic health records by physicians and to use them as a guide to support their adoption process automatically. METHODS: This paper presents, based on the PRISMA statement, a systematic literature review in electronic databases with adoption studies of electronic health records published in English. Software applications that manage and process the data in the electronic health record have been considered, i.e.: computerized physician prescription, electronic medical records, and electronic capture of clinical data. Our review was conducted with the purpose of obtaining a taxonomy of the physicians main barriers for adopting electronic health records, that can be addressed by means of information and communication technology; in particular with the information technology roles of the knowledge management processes. Which take us to the question that we want to address in this work: "What are the critical adoption factors of electronic health records that can be supported by information and communication technology?". Reports from eight databases covering electronic health records adoption studies in the medical domain, in particular those focused on physicians, were analyzed. RESULTS: The review identifies two main issues: 1) a knowledge-based classification of critical factors for adopting electronic health records by physicians; and 2) the definition of a base for the design of a conceptual framework for supporting the design of knowledge-based systems, to assist the adoption process of electronic health records in an automatic fashion. From our review, six critical adoption factors have been identified: user attitude towards information systems, workflow impact, interoperability, technical support, communication among users, and expert support. The main limitation of the taxonomy is the different impact of the adoption factors of electronic health records reported by some studies depending on the type of practice, setting, or attention level; however, these features are a determinant aspect with regard to the adoption rate for the latter rather than the presence of a specific critical adoption factor. CONCLUSIONS: The critical adoption factors established here provide a sound theoretical basis for research to understand, support, and facilitate the adoption of electronic health records to physicians in benefit of patients.

Chan, K. S., et al. (2010). "Review: electronic health records and the reliability and validity of quality measures: a review of the literature." *Med Care Res Rev* **67**(5): 503-527.

Previous reviews of research on electronic health record (EHR) data quality have not focused on the needs of quality measurement. The authors reviewed empirical studies of EHR data quality, published from January 2004, with an emphasis on data attributes relevant to quality measurement. Many of the 35 studies reviewed examined multiple aspects of data quality. Sixty-six percent evaluated data accuracy, 57% data completeness, and 23% data comparability. The diversity in data element, study setting, population, health condition, and EHR system studied within this body of literature made drawing specific conclusions regarding EHR data quality challenging. Future research should focus on the quality of data from specific EHR components and important data attributes for quality measurement such as granularity, timeliness, and comparability. Finally, factors associated with poor or variability in data quality need to be better understood and effective interventions developed.

Chen, H., et al. (2014). "A review of data quality assessment methods for public health information systems." *Int J Environ Res Public Health* **11**(5): 5170-5207.

High quality data and effective data quality assessment are required for accurately evaluating the impact of public health interventions and measuring public health outcomes. Data, data use, and data collection process, as the three dimensions of data quality, all need to be assessed for overall data quality assessment. We reviewed current data quality assessment methods. The relevant study was identified in major databases and well-known institutional websites. We found the dimension of data was most frequently assessed. Completeness, accuracy, and timeliness were the three most-used attributes among a total of 49 attributes of data quality. The major quantitative assessment methods were descriptive surveys and data audits, whereas the common qualitative assessment methods were interview and documentation review. The limitations of the reviewed studies included inattentiveness to data use and data collection process, inconsistency in the definition of attributes of data quality, failure to address data users' concerns and a lack of systematic procedures in data quality assessment. This review study is limited by the coverage of the databases and the breadth of public health information systems. Further research could develop consistent data quality definitions and attributes. More research efforts should be given to assess the quality of data use and the quality of data collection process.

Chen, Y., et al. (2017). "Identifying collaborative care teams through electronic medical record utilization patterns." *J Am Med Inform Assoc* **24**(e1): e111-e120.

Objective: The goal of this investigation was to determine whether automated approaches can learn patient-oriented care teams via utilization of an electronic medical record (EMR) system. Materials and Methods: To perform this investigation, we designed a data-mining framework that relies on a combination of latent topic modeling and network analysis to infer patterns of collaborative teams. We applied the framework to the EMR utilization records of over 10 000 employees and 17 000 inpatients at a large academic medical center during a 4-month window in 2010. Next, we conducted an extrinsic evaluation of the patterns to determine the plausibility of the inferred care teams via surveys with knowledgeable experts. Finally, we conducted an intrinsic evaluation to contextualize each team in terms of collaboration strength (via a cluster coefficient) and clinical credibility (via associations between teams and patient comorbidities). Results: The framework discovered 34 collaborative care teams, 27 (79.4%) of which were confirmed as administratively plausible. Of those, 26 teams depicted strong collaborations, with a cluster coefficient > 0.5. There were 119 diagnostic conditions associated with 34 care teams. Additionally, to provide clarity on how the survey respondents arrived at their determinations, we worked with several oncologists to develop an illustrative example of how a certain team functions in cancer care. Discussion: Inferred collaborative teams are plausible; translating such patterns into optimized collaborative care will require administrative review and integration with management practices. Conclusions: EMR utilization records can be mined for collaborative care patterns in large complex medical centers.

Chen, H., et al. (2014). "Methods for assessing the quality of data in public health information systems: a critical review." *Stud Health Technol Inform* **204**: 13-18.

The quality of data in public health information systems can be ensured by effective data quality assessment. In order to conduct effective data quality assessment, measurable data attributes have to be precisely defined. Then reliable and valid measurement methods for data attributes have to be used to measure each attribute. We conducted a systematic review of data quality assessment methods for public health using major databases and well-known institutional websites. 35 studies were eligible for inclusion in the study. A total of 49 attributes of data quality were identified from the literature. Completeness, accuracy and timeliness were the three most frequently assessed attributes of data quality. Most studies directly examined data values. This is complemented by exploring either data users' perception or documentation quality. However, there are limitations of current data quality assessment methods: a lack of consensus on attributes measured; inconsistent definition of the data quality attributes; a lack of mixed methods for assessing data quality; and inadequate

attention to reliability and validity. Removal of these limitations is an opportunity for further improvement.

Cheraghi-Sohi, S., et al. (2015). "Missed diagnostic opportunities and English general practice: a study to determine their incidence, confounding and contributing factors and potential impact on patients through retrospective review of electronic medical records." *Implement Sci* **10**: 105.

BACKGROUND: Patient safety research has focused largely on hospital settings despite the fact that in many countries, the majority of patient contacts are in primary care. The knowledge base about patient safety in primary care is developing but sparse and diagnostic error is a relatively understudied and an unmeasured area of patient safety. Diagnostic error rates vary according to how 'error' is defined but one suggested hallmark is clear evidence of 'missed opportunity' (MDOs) makes a correct or timely diagnosis to prevent them. While there is no agreed definition or method of measuring MDOs, retrospective manual chart or patient record reviews are a 'gold standard'. This study protocol aims to (1) determine the incidence of MDOs in English general practice, (2) identify the confounding and contributing factors that lead to MDOs and (3) determine the (potential) impact of the detected MDOs on patients. **METHODS/DESIGN:** We plan to conduct a two-phase retrospective review of electronic health records in the Greater Manchester (GM) area of the UK. In the first phase, clinician reviewers will calibrate their performance in identifying and assessing MDOs against a gold standard 'primary reviewer' through the use of 'double' reviews of records. The findings will enable a preliminary estimate of the incidence of MDOs in general practice, which will be used to calculate the number of records to be reviewed in the second phase in order to estimate the true incidence of MDO in general practice. A sample of 15 general practices is required for phase 1 and up to 35 practices for phase 2. In each practice, the sample will consist of 100 patients aged ≥ 18 years on 1 April 2013 who have attended a face-to-face 'index consultation' between 1 April 2013 and 31 March 2015. The index consultation will be selected randomly from each unique patient record, occurring between 1 July 2013 and 30 June 2014. **DISCUSSION:** There are no reliable estimates of safety problems related to diagnosis in English general practice. This study will lay the foundation for safety improvements in this area by providing a more reliable estimate of MDOs, their impact and their contributory factors.

Cleiss (2013). "Emission et diffusion de la carte européenne d'assurance maladie." *Decryptages*(13): 12. <http://www.cleiss.fr/docs/decryptage/decryptage13/projet/DECRYPTAGE-13.pdf>

Ce numéro de Décryptages fait un bilan de la petite carte bleue, la Carte Européenne d'Assurance Maladie, délivrée à près de 5,5 millions de personnes en France en 2012 et qui n'en reste pas moins une facilité encore mal connue des assurés. Le bulletin répond également à deux questions principales : Comment les assurés des régimes français se servent-ils de leur CEAM au sein de l'Union européenne-EEE-Suisse ? Qui sont les assurés des régimes étrangers qui ont utilisé leur CEAM en France entre 2008 et 2012 et comment l'ont-ils employée ?

Coorevits, P., et al. (2013). "Electronic health records: new opportunities for clinical research." *J Intern Med* **274**(6): 547-560.

Clinical research is on the threshold of a new era in which electronic health records (EHRs) are gaining an important novel supporting role. Whilst EHRs used for routine clinical care have some limitations at present, as discussed in this review, new improved systems and emerging research infrastructures are being developed to ensure that EHRs can be used for secondary purposes such as clinical research, including the design and execution of clinical trials for new medicines. EHR systems should be able to exchange information through the use of recently published international standards for their interoperability and clinically validated information structures (such as archetypes and international health terminologies), to ensure consistent and more complete recording and sharing of data for various patient groups. Such systems will counteract the obstacles of differing clinical languages and styles of documentation as well as the recognized incompleteness of routine records. Here, we discuss some of the legal and ethical concerns of clinical research data reuse and technical security measures that can enable such research while protecting privacy. In the emerging research landscape, cooperation infrastructures are being built where research projects can utilize the availability of patient data from federated EHR systems from many different sites, as well as in international

multilingual settings. Amongst several initiatives described, the EHR4CR project offers a promising method for clinical research. One of the first achievements of this project was the development of a protocol feasibility prototype which is used for finding patients eligible for clinical trials from multiple sources.

Davis, K., et al. (2006). Slowing the growth of U.S. health care expenditures : what are the options ? New York Commonwealth Fund: 34 , tabl., fig.

Health care expenditures are expected to continue to rise rapidly over the next decade, outpacing income and imposing stress on families, businesses, and public budgets. Evidence indicates that the U.S. should be able to achieve savings and better value for this investment by creating more efficient and effective health care and insurance systems. This report reviews factors contributing to high expenditures and examines strategies that have the potential to achieve savings, slow spending growth, and improve health system performance. These strategies cluster into six areas: 1) increasing the effectiveness of markets with better information and greater competition; 2) reducing high insurance administrative overhead and achieving more competitive prices; 3) providing incentives to promote efficient and effective care; 4) promoting patient-centered primary care; 5) investing in infrastructure such as health information technology; and 6) investing strategically to improve access, affordability, and equity.

de Bruin, J. S., et al. (2014). "Data use and effectiveness in electronic surveillance of healthcare associated infections in the 21st century: a systematic review." *J Am Med Inform Assoc* **21**(5): 942-951.

OBJECTIVE: As more electronic health records have become available during the last decade, we aimed to uncover recent trends in use of electronically available patient data by electronic surveillance systems for healthcare associated infections (HAIs) and identify consequences for system effectiveness. **METHODS:** A systematic review of published literature evaluating electronic HAI surveillance systems was performed. The PubMed service was used to retrieve publications between January 2001 and December 2011. Studies were included in the review if they accurately described what electronic data were used and if system effectiveness was evaluated using sensitivity, specificity, positive predictive value, or negative predictive value. Trends were identified by analyzing changes in the number and types of electronic data sources used. **RESULTS:** 26 publications comprising discussions on 27 electronic systems met the eligibility criteria. Trend analysis showed that systems use an increasing number of data sources which are either medico-administrative or clinical and laboratory-based data. Trends on the use of individual types of electronic data confirmed the paramount role of microbiology data in HAI detection, but also showed increased use of biochemistry and pharmacy data, and the limited adoption of clinical data and physician narratives. System effectiveness assessments indicate that the use of heterogeneous data sources results in higher system sensitivity at the expense of specificity. **CONCLUSIONS:** Driven by the increased availability of electronic patient data, electronic HAI surveillance systems use more data, making systems more sensitive yet less specific, but also allow systems to be tailored to the needs of healthcare institutes' surveillance programs.

de Lusignan, S., et al. (2014). "Patients' online access to their electronic health records and linked online services: a systematic interpretative review." *Bmj Open* **4**(9): e006021.

OBJECTIVES: To investigate the effect of providing patients online access to their electronic health record (EHR) and linked transactional services on the provision, quality and safety of healthcare. The objectives are also to identify and understand: barriers and facilitators for providing online access to their records and services for primary care workers; and their association with organisational/IT system issues. **SETTING:** Primary care. **PARTICIPANTS:** A total of 143 studies were included. 17 were experimental in design and subject to risk of bias assessment, which is reported in a separate paper. Detailed inclusion and exclusion criteria have also been published elsewhere in the protocol. **PRIMARY AND SECONDARY OUTCOME MEASURES:** Our primary outcome measure was change in quality or safety as a result of implementation or utilisation of online records/transactional services. **RESULTS:** No studies reported changes in health outcomes; though eight detected medication errors and seven reported improved uptake of preventative care. Professional concerns over privacy were reported in 14 studies. 18 studies reported concern over potential increased workload; with some showing an

increase workload in email or online messaging; telephone contact remaining unchanged, and face-to-face contact staying the same or falling. Owing to heterogeneity in reporting overall workload change was hard to predict. 10 studies reported how online access offered convenience, primarily for more advantaged patients, who were largely highly satisfied with the process when clinician responses were prompt. CONCLUSIONS: Patient online access and services offer increased convenience and satisfaction. However, professionals were concerned about impact on workload and risk to privacy. Studies correcting medication errors may improve patient safety. There may need to be a redesign of the business process to engage health professionals in online access and of the EHR to make it friendlier and provide equity of access to a wider group of patients. A1 SYSTEMATIC REVIEW REGISTRATION NUMBER: PROSPERO CRD42012003091.

de Lusignan, S. et Seroussi, B. (2013). "A comparison of English and French approaches to providing patients access to Summary Care Records: scope, consent, cost." *Stud Health Technol Inform* **186**: 61-65.

Online access to records is part of the process of empowering patients. National health services in both France and England have introduced systems to provide online access to summary health data. The English system was called the "Summary Care Record (SCR)," made accessible to patients through "HealthSpace". The French system Dossier Medical Personnel (DMP) is a patient controlled record clinicians enter data into. The objective was to compare the programmes and lessons from the introduction of patient access. We carried out a literature review. The English system has been progressively de-scoped, with HealthSpace due to close in 2013, only 0.01% of the population signing up for "advanced accounts". The French system slowly grows as more documents are added; though only 0.31% of the population have opened a DMP. The English SCR has an opt-out consent model, whereas the French DMP is patient controlled opt-in consent model. The SCR sits within an NHS intranet while the DMP sits on the Internet. Both systems have costs of around 200 million Euro. Providing patients online access to their medical records is potentially empowering. However, the English HealthSpace and SCR have failed to deliver and are due to be withdrawn as methods of providing patients online access. The French system is still in operation but much criticized for its high costs and low uptake. The design of these systems does not appear to have met patients' needs or been readily integrated into physicians workflow.

Dean, B. B., et al. (2009). "Review: use of electronic medical records for health outcomes research: a literature review." *Med Care Res Rev* **66**(6): 611-638.

This review assessed the use of electronic medical record (EMR) systems in outcomes research. We systematically searched PubMed to identify articles published from January 2000 to January 2007 involving EMR use for outpatient-based outcomes research in the United States. EMR-based outcomes research studies (n = 126) have increased sixfold since 2000. Although chronic conditions were most common, EMRs were also used to study less common diseases, highlighting the EMRs' flexibility to examine large cohorts as well as identify patients with rare diseases. Traditional multi-variate modeling techniques were the most commonly used technique to address confounding and potential selection bias. Data validation was a component in a quarter of studies, and many evaluated the EMR's ability to achieve similar results previously achieved using other data sources. Investigators using EMR data should aim for consistent terminology, focus on adequately describing their methods, and consider appropriate statistical methods to control for confounding and treatment-selection bias.

Demiris, G. et Kneale, L. (2015). "Informatics Systems and Tools to Facilitate Patient-centered Care Coordination." *Yearb Med Inform* **10**(1): 15-21.

INTRODUCTION: There is a growing international focus on patient-centered care. A model designed to facilitate this type of care in the primary care setting is the patient-centered medical home. This model of care strives to be patient-focused, comprehensive, team-based, coordinated, accessible, and focused on quality and safety of care. OBJECTIVE: The objective of this paper is to identify the current status and future trends of patient-centered care and the role of informatics systems and tools in facilitating this model of care. METHODS: In this paper we review recent scientific literature of the past four years to identify trends and state of current evidence when it comes to patient-centered care overall, and more specifically medical homes. RESULTS: There are several studies that indicate

growth and development in seven informatics areas within patient-centered care, namely clinical decision support, registries, team care, care transitions, personal health records, telehealth, and measurement. In some cases we are still lacking large randomized clinical trials and the evidence base is not always solid, but findings strongly indicate the potential of informatics to support patient-centered care. CONCLUSION: Current evidence indicates that advancements have been made in implementing and evaluating patient-centered care models. Technical, legal, and practical challenges still remain. Further examination of the impact of patient-centered informatics tools and systems on clinical outcomes is needed.

Denecke, K. (2014). "Ethical aspects of using medical social media in healthcare applications." Stud Health Technol Inform **198**: 55-62.

The advances in internet and mobile technologies and their increased use in healthcare led to the development of a new research field: health web science. Many research questions are addressed in that field, starting from analysing social-media data, to recruiting participants for clinical studies and monitoring the public health status. The information provided through this channel is unique in a sense that there is no other written source of experiences from patients and health carers. The increased usage and analysis of health web data poses questions on privacy, and ethics. Through a literature review, the current awareness on ethical issues in the context of public health monitoring and research using medical social media data is determined. Further, considerations on the topic were collected from members of the IMIA Social Media Working group.

Devers, K. J., et al. (2013). The Feasibility of Using Electronic Health Records (EHRs) and Other Electronic Health Data for Research on Small Populations. Washington The Urban Institute: 120.
http://www.urban.org/UploadedPDF/413010_The-Feasibility-of-Using-Electronic-Health-Data-for-Research-on-Small-Populations.pdf

This report explores the feasibility of using electronic health record (EHR) and other electronic health data for research on small populations. The first part of the report illustrates the challenges and limitations of using existing federal surveys and federal claims databases for studying small populations. The second part explores the potential of the increasingly available EHR and other existing electronic health data to complement federal data sources, as well as potential next steps to demonstrate and improve the feasibility of using EHRs for research on small populations.

Doupi, P., et al. (2005). "Implementing interoperable secure health information systems." Stud Health Technol Inform **115**: 187-214.

Ensuring the privacy and confidentiality of individuals has made security an indispensable component of health information systems. Delivery of healthcare services beyond the enterprise level to the regional, national or cross-border area places new challenges for security implementation. We review the current status and uptake of security measures in healthcare settings across European countries and examine in more detail some of the leading eHealth applications. Drawing on the findings of this analysis, we propose a generic model for streamlining the security implementation process on any level -local, regional, national or cross-border. Finally, we address the future prospects and requirements for advancing secure delivery of healthcare services across European borders.

Dranove, D., et al. (2013). Investment Subsidies and the Adoption of Electronic Medical Records in Hospitals. NBER Working Paper series : n°20553. Cambridge NBER: 16 ,+annexes, tabl., fig.
<http://papers.nber.org/papers/w20553>

In February 2009 the U.S. Congress unexpectedly passed the Health Information Technology for Economic and Clinical Health Act (HITECH). HITECH provides up to \$27 billion to promote adoption and appropriate use of Electronic Medical Records (EMR) by hospitals. We measure the extent to which HITECH incentive payments spurred EMR adoption by independent hospitals. Adoption rates for all independent hospitals grew from 48 percent in 2008 to 77 percent by 2011. Absent HITECH incentives, we estimate that the adoption rate would have instead been 67 percent in 2011. When we consider that HITECH funds were available for all hospitals and not just marginal adopters, we estimate that the

cost of generating an additional adoption was \$48 million. We also estimate that in the absence of HITECH incentives, the 77 percent adoption rate would have been realized by 2013, just 2 years after the date achieved due to HITECH.

Emmanouilidou, M. et Burke, M. (2013). "A thematic review and a policy-analysis agenda of Electronic Health Records in the Greek National Health System." *Health Policy* **109**(1): 31-37.

The increasing pressure to improve healthcare outcomes and reduce costs is driving the current agenda of governments at worldwide level and calls for a fundamental reform of the status quo of health systems. This is especially the case with the Greek NHS (National Health System), a system in continuous crisis, and with the recent ongoing financial turbulence under intensive scrutiny. Technological innovations and Electronic Health Records (EHR) in particular, are recognised as key enablers in mitigating the existing burdens of healthcare. As a result, EHR is considered a core component in technology-driven reform processes. Nonetheless, the successful implementation and adoption of EHR proves to be a challenging task due to a mixture of technological, organisational and political issues. Drawing upon experiences within the European Union (EU) healthcare setting and the Greek NHS the paper proposes a conceptual framework as a policy-analysis agenda for EHR interventions in Greece. While the context of discussion is Greece, the paper aims to also derive useful insights to healthcare policy-makers around the globe.

Eslami Andargoli, A., et al. (2017). "Health information systems evaluation frameworks: A systematic review." *Int J Med Inform* **97**: 195-209.

BACKGROUND: Evaluation of health information systems (HISs) is complicated because of the complex nature of the health care domain. Various studies have proposed different frameworks to reduce the complexity in the assessment of these systems. The aim of these frameworks is to provide a set of guidelines for the evaluation of the adequacy of health care information systems. **OBJECTIVE:** This paper aims to analyse studies on the evaluation of HISs by applying a content, context and process (CCP) framework to address the 'who', 'what', 'how', 'when', and 'why' of the evaluation processes used. This will allow for a better understanding of the relative strengths and weaknesses of various HISs evaluation frameworks, and will pave the way for developing a more complete framework for HISs. **METHOD:** A systematic literature review on HIS evaluation studies was undertaken to identify the currently available HIS evaluation frameworks. Five academic databases were selected to conduct this systematic literature review. **RESULTS:** Most of the studies only address some, but not all, of the five main questions, i.e. the who, what, how, when, why, and that there was a lack of consensus in the way these questions were addressed. The critical role of context was also largely neglected in these studies. **CONCLUSIONS:** Evaluation of HISs is complex. The health care domain is highly context sensitive and in order to have a complete assessment of HISs, consideration of contextual factors is necessary. Specifically, to have the right set of criteria to measure the 'what', the answer to the 'who' of the evaluation is necessary.

Esmaeilzadeh, P. et Sambasivan, M. (2017). "Patients' support for health information exchange: a literature review and classification of key factors." *BMC Med Inform Decis Mak* **17**(1): 33.

BACKGROUND: Literature indicates that one of the most important factors affecting the widespread adoption of Health Information Exchange (HIE) is patient support and endorsement. In order to reap all the expected benefits of HIE, patients' acceptance of technology is a challenge that is not fully studied. There are a few studies which have focused on requirements of electronic medical information exchange from consumers' views and expectations. This study is aimed at reviewing the literature to articulate factors that affect patients to support HIE efforts. **METHODS:** A literature review of current studies addressing patients' views on HIE from 2005 was undertaken. Five electronic research databases (Science Direct, PubMed, Web of Science, CINAHL, and Academic Search Premiere) were searched to retrieve articles reporting pros and cons of HIE from patients' opinion. **RESULTS:** One hundred and ninety six articles were initially retrieved from the databases. Out of 196, 36 studies met the inclusion criteria and were fully reviewed. Our findings indicate that patient's attitude toward HIE is affected by seven main factors: perceived benefits, perceived concerns, patient characteristics, patient participation level in HIE, type of health information, identity of recipients, and patient

preferences regarding consent and features. CONCLUSIONS: The findings provide useful theoretical implications for research by developing a classification of significant factors and a framework based on the lessons learned from the literature to help guide HIE efforts. Our results also have fundamental practical implications for policy makers, current and potential organizers of HIEs by highlighting the role of patients in the widespread implementation of HIE. The study indicates that new approaches should be applied to completely underline HIE benefits for patients and also address their concerns.

Fiander, M., et al. (2015). "Interventions to increase the use of electronic health information by healthcare practitioners to improve clinical practice and patient outcomes." Cochrane Database Syst Rev(3): Cd004749.

BACKGROUND: There is a large volume of health information available, and, if applied in clinical practice, may contribute to effective patient care. Despite an abundance of information, sub-optimal care is common. Many factors influence practitioners' use of health information, and format (electronic or other) may be one such factor. OBJECTIVES: To assess the effects of interventions aimed at improving or increasing healthcare practitioners' use of electronic health information (EHI) on professional practice and patient outcomes. SEARCH METHODS: We searched The Cochrane Library (Wiley), MEDLINE (Ovid), EMBASE (Ovid), CINAHL (EBSCO), and LISA (EBSCO) up to November 2013. We contacted researchers in the field and scanned reference lists of relevant articles. SELECTION CRITERIA: We included studies that evaluated the effects of interventions to improve or increase the use of EHI by healthcare practitioners on professional practice and patient outcomes. We defined EHI as information accessed on a computer. We defined 'use' as logging into EHI. We considered any healthcare practitioner involved in patient care. We included randomized, non-randomized, and cluster randomized controlled trials (RCTs, NRCTs, CRCTs), controlled clinical trials (CCTs), interrupted time series (ITS), and controlled before-and-after studies (CBAs). The comparisons were: electronic versus printed health information; EHI on different electronic devices (e.g. desktop, laptop or tablet computers, etc.; cell / mobile phones); EHI via different user interfaces; EHI provided with or without an educational or training component; and EHI compared to no other type or source of information. DATA COLLECTION AND ANALYSIS: Two review authors independently extracted data and assessed the risk of bias for each study. We used GRADE to assess the quality of the included studies. We reassessed previously excluded studies following our decision to define logins to EHI as a measure of professional behavior. We reported results in natural units. When possible, we calculated and reported median effect size (odds ratio (OR), interquartile ranges (IQR)). Due to high heterogeneity across studies, meta-analysis was not feasible. MAIN RESULTS: We included two RCTs and four CRCTs involving 352 physicians, 48 residents, and 135 allied health practitioners. Overall risk of bias was low as was quality of the evidence. One comparison was supported by three studies and three comparisons were supported by single studies, but outcomes across the three studies were highly heterogeneous. We found no studies to support EHI versus no alternative. Given these factors, it was not possible to determine the relative effectiveness of interventions. All studies reported practitioner use of EHI, two reported on compliance with electronic practice guidelines, and none reported on patient outcomes. One trial (139 participants) measured guideline adherence for an electronic versus printed guideline, but reported no difference between groups (median OR 0.85, IQR 0.74 to 1.08). One small cross-over trial (10 participants) reported increased use of clinical guidelines when provided with a mobile versus stationary, desktop computer (mean use per shift: intervention group (IG) 3.6, standard deviation (SD) 1.7 vs. control group (CG) 2.0 (SD 1.9), P value = 0.033). One cross-over trial (203 participants) reported that using a customized versus a generic interface had little impact on practitioners' use of EHI (mean difference in adjusted end-of-study rate: 0.77 logins/month/user, 95% confidence interval (CI) 0.43 to 1.11). Three trials included education or training and reported increased use of EHI by practitioners following training. AUTHORS' CONCLUSIONS: This review provided no evidence that the use of EHI translates into improved clinical practice or patient outcomes, though it does suggest that when practitioners are provided with EHI and education or training, the use of EHI increases. We have defined use as the activity of logging into an EHI resource, but based on our findings use does not automatically translate to the application of EHI in practice. While using EHI may be an important component of evidence-based medicine, alone it is insufficient to improve patient care or clinical practices. For EHI to be applied in patient care, it will be necessary to understand why practitioners' are reluctant to apply EHI when treating people, and to determine the most effective way(s) to reduce this reluctance.

Fleming, D., et al. (2008). Electronic Health Indicator Data (eHID). Bruxelles Commission européenne: 112 , tabl., graph., ann.

Le projet eHID (Electronic Health Indicator Data) conduit par la Commission européenne a pour objectif de collecter des indicateurs de prévalence en soins de santé primaire à partir de réseaux de médecins généralistes de l'Union européenne. Ce rapport final présente des indicateurs de prévalence et d'incidence pour trois pathologies : diabète, maladie ischémique et santé mentale. Neuf pays ont participé à cette enquête. Les définitions ont été soigneusement choisies pour évaluer la prévalence et l'incidence explicitement reconnues et relevées par les médecins.

Fong, A., et al. (2017). "Assessment of Automating Safety Surveillance From Electronic Health Records: Analysis for the Quality and Safety Review System." J Patient Saf.

BACKGROUND AND OBJECTIVES: In an effort to improve and standardize the collection of adverse event data, the Agency for Healthcare Research and Quality is developing and testing a patient safety surveillance system called the Quality and Safety Review System (QSRS). Its current abstraction from medical records is through manual human coders, taking an average of 75 minutes to complete the review and abstraction tasks for one patient record. With many healthcare systems across the country adopting electronic health record (EHR) technology, there is tremendous potential for more efficient abstraction by automatically populating QRS. In the absence of real-world testing data and models, which require a substantial investment, we provide a heuristic assessment of the feasibility of automatically populating QRS questions from EHR data. **METHODS:** To provide an assessment of the automation feasibility for QRS, we first developed a heuristic framework, the Relative Abstraction Complexity Framework, to assess relative complexity of data abstraction questions. This framework assesses the relative complexity of characteristics or features of abstraction questions that should be considered when determining the feasibility of automating QRS. Questions are assigned a final relative complexity score (RCS) of low, medium, or high by a team of clinicians, human factors, and natural language processing researchers. **RESULTS:** One hundred thirty-four QRS questions were coded using this framework by a team of natural language processing and clinical experts. Fifty-five questions (41%) had high RCS and would be more difficult to automate, such as "Was use of a device associated with an adverse outcome(s)?" Forty-two questions (31%) had medium RCS, such as "Were there any injuries as a result of the fall(s)?" and 37 questions (28%) had low RCS, such as "Did the patient deliver during this stay?" These results suggest that Blood and Hospital Acquired Infections-Clostridium Difficile Infection (HAI-CDI) modules would be relatively easier to automate, whereas Surgery and HAI-Surgical Site Infection would be more difficult to automate. **CONCLUSIONS:** Although EHRs contain a wealth of information, abstracting information from these records is still very challenging, particularly for complex questions, such as those concerning patient adverse events. In this work, we developed a heuristic framework, which can be applied to help guide conversations around the feasibility of automating QRS data abstraction. This framework does not aim to replace testing with real data but complement the process by providing initial guidance and direction to subject matter experts to help prioritize, which abstraction questions to test for feasibility using real data.

Fonkych, K. et Taylor, R. (2005). The State and Pattern of Health Information Technology Adoption. Santa Monica Rand corporation: 52 , tabl., graph.

http://www.rand.org/pubs/monographs/2005/RAND_MG409.pdf

Innovations in information technology (IT) have improved efficiency and quality in many industries. Healthcare has not been one of them. Although some administrative IT systems, such as those for billing, scheduling, and inventory management, are already in place in the healthcare industry, little adoption of clinical IT, such as Electronic Medical Record Systems (EMR-S) and Clinical Decision Support tools, has occurred. Government intervention has been called for to speed the adoption process for Health Information Technology (HIT), based on the widespread belief that its adoption, or diffusion, is too slow to be socially optimal. In this report, we estimate the current level and pattern of HIT adoption in the different types of healthcare organizations, and we evaluate factors that affect this diffusion process. First, we make an effort to derive a population-wide adoption level of administrative and clinical HIT applications according to information in the Healthcare Information and Management

Systems Society (HIMSS)-Dorenfest database (formerly the Dorenfest IHDS+TM Database, second release, 2004) and compare our estimates to alternative ones. We then attempt to summarize the current state and dynamics of HIT adoption according to these data and briefly review existing empirical studies on the HIT-adoption process. By comparing adoption rates across different types of healthcare providers and geographical areas, we help focus the policy agenda by identifying which healthcare providers lag behind and may need the most incentives to adopt HIT. Next, we employ regression analysis to separate the effects of the provider's characteristics and factors on adoption of Electronic Medical Records (EMR), Computerized Physician Order Entry (CPOE), and Picture Archiving Communications Systems (PACS), and compare the effects to findings in the literature.

Fontaine, P., et al. (2010). "Systematic review of health information exchange in primary care practices." *J Am Board Fam Med* **23**(5): 655-670.

BACKGROUND: Unprecedented federal interest and funding are focused on secure, standardized, electronic transfer of health information among health care organizations, termed health information exchange (HIE). The stated goals are improvements in health care quality, efficiency, and cost. Ambulatory primary care practices are essential to this process; however, the factors that motivate them to participate in HIE are not well studied, particularly among small practices. **METHODS:** We conducted a systematic review of the literature about HIE participation from January 1990 through mid-September 2008 to identify peer-reviewed and non-peer-reviewed publications in bibliographic databases and websites. Reviewers abstracted each publication for predetermined key issues, including stakeholder participation in HIE, and the benefits, barriers, and overall value to primary care practices. We identified themes within each key issue, then grouped themes and identified supporting examples for analysis. **RESULTS:** One hundred and sixteen peer-reviewed, non-peer-reviewed, and web publications were retrieved, and 61 met inclusion criteria. Of 39 peer-reviewed publications, one-half reported original research. Among themes of cost savings, workflow efficiency, and quality, the only benefits to be reliably documented were those regarding efficiency, including improved access to test results and other data from outside the practice and decreased staff time for handling referrals and claims processing. Barriers included cost, privacy and liability concerns, organizational characteristics, and technical barriers. A positive return on investment has not been documented. **CONCLUSIONS:** The potential for HIE to reduce costs and improve the quality of health care in ambulatory primary care practices is well recognized but needs further empiric substantiation.

Freedman, S., et al. (2015). Information Technology and Patient Health: Analyzing Outcomes, Populations, and Mechanisms. *NBER Working Paper Series ; n° 21389*. Cambridge NBER: 50 , tabl., fig., annexes.
<http://www.nber.org/papers/w21389>

We study the effect of hospital adoption of electronic medical records (EMRs) on health outcomes, particularly patient safety indicators (PSIs). We find evidence of a positive impact of EMRs on PSIs via decision support rather than care coordination. Consistent with this mechanism, we find an EMR with decision support is more effective at reducing PSIs for less complicated cases, using several different metrics for complication. These findings indicate the negligible impacts for EMRs found by previous studies focusing on the Medicare population and/or mortality do not apply in all settings.

Fried, T. R., et al. (2017). "Effect of the Tool to Reduce Inappropriate Medications on Medication Communication and Deprescribing." *J Am Geriatr Soc* **65**(10): 2265-2271.

OBJECTIVES: To examine the effect of the Tool to Reduce Inappropriate Medications (TRIM), a web tool linking an electronic health record (EHR) to a clinical decision support system, on medication communication and prescribing. **DESIGN:** Randomized clinical trial. **SETTING:** Primary care clinics at a Veterans Affairs Medical Center. **PARTICIPANTS:** Veterans aged 65 and older prescribed seven or more medications randomized to receipt of TRIM or usual care (N = 128). **INTERVENTION:** TRIM extracts information on medications and chronic conditions from the EHR and contains data entry screens for information obtained from brief chart review and telephonic patient assessment. These data serve as input for automated algorithms identifying medication reconciliation discrepancies, potentially inappropriate medications (PIMs), and potentially inappropriate regimens. Clinician feedback reports summarize discrepancies and provide recommendations for deprescribing. Patient feedback reports

summarize discrepancies and self-reported medication problems. MEASUREMENTS: Primary: subscales of the Patient Assessment of Care for Chronic Conditions (PACIC) related to shared decision-making; clinician and patient communication. Secondary: changes in medications. RESULTS: 29.7% of TRIM participants and 15.6% of control participants provided the highest PACIC ratings; this difference was not significant. Adjusting for covariates and clustering of patients within clinicians, TRIM was associated with significantly more-active patient communication and facilitative clinician communication and with more medication-related communication among patients and clinicians. TRIM was significantly associated with correction of medication discrepancies but had no effect on number of medications or reduction in PIMs. CONCLUSION: TRIM improved communication about medications and accuracy of documentation. Although there was no association with prescribing, the small sample size provided limited power to examine medication-related outcomes.

Gallego, A. I., et al. (2010). "Assessing the cost of electronic health records: a review of cost indicators." *Telemed J E Health* **16**(9): 963-972.

We systematically reviewed PubMed and EBSCO business, looking for cost indicators of electronic health record (EHR) implementations and their associated benefit indicators. We provide a set of the most common cost and benefit (CB) indicators used in the EHR literature, as well as an overall estimate of the CB related to EHR implementation. Overall, CB evaluation of EHR implementation showed a rapid capital-recovering process. On average, the annual benefits were 76.5% of the first-year costs and 308.6% of the annual costs. However, the initial investments were not recovered in a few studied implementations. Distinctions in reporting fixed and variable costs are suggested.

GAO (2010). Health care delivery : Features of Integrated Systems Support Patient Care Strategies and Access to Care, but Systems Face Challenges. Washington GAO: 28 , annexes.

<http://www.gao.gov/new.items/d1149.pdf>

The Health Care Safety Net Act of 2008 directed GAO to report on integrated health system models that integrate primary, specialty, and acute care and serve uninsured and medically underserved populations. This report provide more in-depth information on organizational features that IDs use to support strategies to improve patient care; approaches IDs use to facilitate access to care for underserved populations; and challenges IDs encounter in providing care, including care provided to underserved populations.

GAO (2016). Electronic Health Information : HHS Needs to Strengthen Security and Privacy Guidance and Oversight. Washington GAO: 38.

<http://www.gao.gov/assets/680/679260.pdf>

As a digital version of a patient's medical record or chart, an EHR can make pertinent health information more readily available and usable for providers and patients. However, recent data breaches highlight the need to ensure the security and privacy of these records. HHS has primary responsibility for setting standards for protecting electronic health information and for enforcing compliance with these standards. GAO was asked to review the current health information cybersecurity infrastructure. The specific objectives were to (1) describe expected benefits of and cyber threats to electronic health information, (2) determine the extent to which HHS security and privacy guidance for EHRs are consistent with federal cybersecurity guidance, and (3) assess the extent to which HHS oversees these requirements. To address these objectives, GAO reviewed relevant reports, federal guidance, and HHS documentation and interviewed subject matter experts and agency officials.

Garber, S., et al. (2014). Redirecting Innovation in U.S. Health Care. Options to Decrease Spending and Increase Value. Santa-Monica The Rand: 103.

http://www.rand.org/pubs/research_reports/RR308.html

New medical technologies are a leading driver of U.S. health care spending. This report identifies promising policy options to change which medical technologies are created, with two related policy goals: (1) Reduce total health care spending with the smallest possible loss of health benefits, and (2)

ensure that new medical products that increase spending are accompanied by health benefits that are worth the spending increases. The analysis synthesized information from peer-reviewed and other literature, a panel of technical advisors convened for the project, and 50 one-on-one expert interviews. The authors also conducted case studies of eight medical products. The following features of the U.S. health care environment tend to increase spending without also conferring major health benefits: lack of basic scientific knowledge about some disease processes, costs and risks of U.S. Food and Drug Administration (FDA) approval, limited rewards for medical products that could lower spending, treatment creep, and the medical arms race.

Garrett, N. Y., et al. (2011). "Characterization of public health alerts and their suitability for alerting in electronic health record systems." *J Public Health Manag Pract* **17**(1): 77-83.

Public health agencies including federal, state, and local governments routinely send out public health advisories and alerts via e-mail and text messages to health care providers to increase awareness of public health events and situations. Agencies must ensure that practitioners have timely and accessible information at the critical point-of-care. Electronic health record (EHR) systems have the potential to alert physicians of emerging health conditions deemed important for public health at the most critical time of need. To understand how public health agencies can leverage existing alerting mechanisms in EHR systems, it is important to understand characteristics of public health alerts to determine their suitability for alerting in EHR systems. Authors conducted a review and analysis of public health alerts for a 3-year period to identify critical data attributes necessary to support public health alerting in EHR systems. The alerts were restricted to those most relevant for clinical care. The results showed that there is an opportunity for disseminating actionable information to clinical practitioners at the point of care to guide care and reporting. Public health alerts in EHR systems can be useful in reporting, recommending specific tests, as well as suggesting secondary prevention.

Gentil, M. L., et al. (2017). "Factors influencing the development of primary care data collection projects from electronic health records: a systematic review of the literature." *BMC Med Inform Decis Mak* **17**(1): 139.

BACKGROUND: Primary care data gathered from Electronic Health Records are of the utmost interest considering the essential role of general practitioners (GPs) as coordinators of patient care. These data represent the synthesis of the patient history and also give a comprehensive picture of the population health status. Nevertheless, discrepancies between countries exist concerning routine data collection projects. Therefore, we wanted to identify elements that influence the development and durability of such projects. **METHODS:** A systematic review was conducted using the PubMed database to identify worldwide current primary care data collection projects. The gray literature was also searched via official project websites and their contact person was emailed to obtain information on the project managers. Data were retrieved from the included studies using a standardized form, screening four aspects: projects features, technological infrastructure, GPs' roles, data collection network organization. **RESULTS:** The literature search allowed identifying 36 routine data collection networks, mostly in English-speaking countries: CPRD and THIN in the United Kingdom, the Veterans Health Administration project in the United States, EMERALD and CPCSSN in Canada. These projects had in common the use of technical facilities that range from extraction tools to comprehensive computing platforms. Moreover, GPs initiated the extraction process and benefited from incentives for their participation. Finally, analysis of the literature data highlighted that governmental services, academic institutions, including departments of general practice, and software companies, are pivotal for the promotion and durability of primary care data collection projects. **CONCLUSION:** Solid technical facilities and strong academic and governmental support are required for promoting and supporting long-term and wide-range primary care data collection projects.

Georges-Picot, A., et al. (2008). "Capgemini Consulting. Rencontres Healthcare Information and Management Systems Society (HIMSS)." *Gestions Hospitalieres*(480): 673-681.

[BDSP. Notice produite par EHESP psIBR0xE. Diffusion soumise à autorisation]. Le congrès des systèmes d'information de santé aux USA (HIMSS) est un moment exceptionnel pour mesurer, année après année, les tendances dans la mise en oeuvre et l'utilisation des systèmes d'information dans la santé aux USA et ce qui fondamentalement nous différencie nous, Européens, des approches des

acteurs nord-américains. Cette session HIMSS à Orlando - qui a fait suite à celles de Dallas, San Diego et la Nouvelle-Orléans - nous a fait percevoir quatre points majeurs : la place du retour sur investissement ("return on investment" (ROI) dans les processus de décision SIH ; la question du "business model" du dossier médical partagé (DMP) reste ouverte : les projets de dossier médical personnel/partagé ville/hôpital existent aussi aux USA ; les alertes dans la lutte contre les "médical errors" ; la conduite du changement dans l'investissement projet : elle est au centre des préoccupations des responsables, car c'est elle la seule vraie garantie du retour sur investissement des projets SIH. Témoignages sur les utilisations du systèmes d'information de santé aux USA : Plates-formes régionales de santé. Rencontre avec St Luke's Health System ; Optimisation du parcours patient. La solution Awarix ; Florida Hospital Celebration Health. Visite guidée... ; Une approche territoriale de la santé : les RHIO (Regional Health Integration Organization). Jaxcare, le RHIO de Jacksonville ; Epicenter d'EPIC. Un progiciel intégré de production de soins.

Georgoulas, A., et al. (2003). "RESHEN, a best practice approach for secure healthcare networks in Europe." Stud Health Technol Inform **96**: 51-59.

Electronic communication of healthcare related information (in the framework of Regional Healthcare Information Networks), introduces a number of security risks with regard to confidentiality, integrity and availability, which can become quite crucial taking into account its sensitive nature. Public Key Infrastructure (PKI) is acknowledged as an appropriate means for dealing with such risks, as long as all the involved critical factors are first practically assessed. This paper presents a best-practice approach for secure regional healthcare networks in Europe, examining all the identified crucial parameters (technical, organisational, legal/regulatory, medical and business). Our approach is conducted at two levels (the regional and the European), including the integration of PKI-aware security mechanisms (strong authentication, encryption, digital signature, time-stamping) in three regional pilot sites in Greece, Finland and Germany and demonstrating their interconnection in a pan-European architecture. Following the above approach, some major conclusions are excluded, pointing out existing open issues and possible steps forward.

Gibson, M., et al. (2005). "Multi-tasking in practice : coordinated activities in the computer supported doctor-patient consultation." International Journal of Medical Informatics **74**(6): 425-436.

Goldwater, J. C., et al. (2014). "Open source electronic health records and chronic disease management." J Am Med Inform Assoc **21**(e1): e50-54.

OBJECTIVE: To study and report on the use of open source electronic health records (EHR) to assist with chronic care management within safety net medical settings, such as community health centers (CHC). METHODS AND MATERIALS: The study was conducted by NORC at the University of Chicago from April to September 2010. The NORC team undertook a comprehensive environmental scan, including a literature review, a dozen key informant interviews using a semistructured protocol, and a series of site visits to CHC that currently use an open source EHR. RESULTS: Two of the sites chosen by NORC were actively using an open source EHR to assist in the redesign of their care delivery system to support more effective chronic disease management. This included incorporating the chronic care model into an CHC and using the EHR to help facilitate its elements, such as care teams for patients, in addition to maintaining health records on indigent populations, such as tuberculosis status on homeless patients. DISCUSSION: The ability to modify the open-source EHR to adapt to the CHC environment and leverage the ecosystem of providers and users to assist in this process provided significant advantages in chronic care management. Improvements in diabetes management, controlled hypertension and increases in tuberculosis vaccinations were assisted through the use of these open source systems. CONCLUSIONS: The flexibility and adaptability of open source EHR demonstrated its utility and viability in the provision of necessary and needed chronic disease care among populations served by CHC.

Gill, R. et Borycki, E. M. (2017). "The Use of Case Studies in Systems Implementations Within Health Care Settings: A Scoping Review." Stud Health Technol Inform **234**: 142-149.

There is little evidence available in the research literature as to how to undertake an implementation process that ensures electronic medical record (EMR)/electronic health record (EHR) implementation success (i.e. high levels of clinician adoption). The research literature has documented the presence of a direct relationship between how systems are implemented and their level of adoption by clinicians after implementation. In order to develop recommendations for systems implementation to enhance the level of clinician adoption and to ensure EHR/EMR success, researchers need to analyze implementation failures (i.e. where there has been a low level of adoption among clinicians) and successes (i.e. where there has been a high level of clinician adoption). This paper examines EMR/EHR system implementation in the context of adoption success, by conducting a scoping review of the EMR/EHR case study literature. The paper attempts to answer the following: "How does the published, case study research literature provide insights into the success and/or failure of EMR/EHR implementations?" Case studies can provide insights that allow researchers to identify best practice approaches to EMR/EHR implementations that may turn the tide towards reducing the number failed EMR/EHR implementation projects.

Goldstein, N. D. et Sarwate, A. D. (2016). "Privacy, security, and the public health researcher in the era of electronic health record research." *Online J Public Health Inform* **8**(3): e207.

Health data derived from electronic health records are increasingly utilized in large-scale population health analyses. Going hand in hand with this increase in data is an increasing number of data breaches. Ensuring privacy and security of these data is a shared responsibility between the public health researcher, collaborators, and their institutions. In this article, we review the requirements of data privacy and security and discuss epidemiologic implications of emerging technologies from the computer science community that can be used for health data. In order to ensure that our needs as researchers are captured in these technologies, we must engage in the dialogue surrounding the development of these tools.

Goldzweig, C. L., et al. (2013). "Electronic patient portals: evidence on health outcomes, satisfaction, efficiency, and attitudes: a systematic review." *Ann Intern Med* **159**(10): 677-687.

BACKGROUND: Patient portals tied to provider electronic health record (EHR) systems are increasingly popular. PURPOSE: To systematically review the literature reporting the effect of patient portals on clinical care. DATA SOURCES: PubMed and Web of Science searches from 1 January 1990 to 24 January 2013. STUDY SELECTION: Hypothesis-testing or quantitative studies of patient portals tethered to a provider EHR that addressed patient outcomes, satisfaction, adherence, efficiency, utilization, attitudes, and patient characteristics, as well as qualitative studies of barriers or facilitators, were included. DATA EXTRACTION: Two reviewers independently extracted data and addressed discrepancies through consensus discussion. DATA SYNTHESIS: From 6508 titles, 14 randomized, controlled trials; 21 observational, hypothesis-testing studies; 5 quantitative, descriptive studies; and 6 qualitative studies were included. Evidence is mixed about the effect of portals on patient outcomes and satisfaction, although they may be more effective when used with case management. The effect of portals on utilization and efficiency is unclear, although patient race and ethnicity, education level or literacy, and degree of comorbid conditions may influence use. LIMITATION: Limited data for most outcomes and an absence of reporting on organizational and provider context and implementation processes. CONCLUSION: Evidence that patient portals improve health outcomes, cost, or utilization is insufficient. Patient attitudes are generally positive, but more widespread use may require efforts to overcome racial, ethnic, and literacy barriers. Portals represent a new technology with benefits that are still unclear. Better understanding requires studies that include details about context, implementation factors, and cost.

Grant, J., et al. (2014). Supporting the development of a new health R&D strategy. A rapid review of international theory and practice for Norway's HelseOmsorg2. Santa-Monica Rand Corporation: 74 , tabl. http://www.rand.org/pubs/research_reports/RR628.html

The HelseOmsorg21 initiative was set up by the Ministry of Health and Care Services to develop a new research and innovation strategy for health and care services in Norway. The HelseOmsorg21 Strategy Group, through the Research Council of Norway which is providing the secretariat for the strategy

development, asked RAND Europe to support the strategic review process. RAND Europe's role was to conduct a series of rapid evidence reviews around the recommendations arising from the five working groups that comprise the initiative. The reviews were conducted around networks and collaboration, data linkage and exchange, culture, values and leadership, and incentives for innovation, while capacity building was a recurrent theme throughout. This report presents the rapid evidence reviews, summarising relevant literature and highlighting international examples of particularly relevant or innovative approaches. The issues and ideas identified around each theme are then pulled together in a suggested conceptual representation of the Norwegian health and care research system.

Gray, B. H., et al. (2011). "Electronic Health Records: An International Perspective on Meaningful Use." Issues in International Health Policy: 15 , graph., tabl.

Research has shown that the United States lags many other countries in the adoption of electronic health records (EHRs). The U.S. has now embarked on a major effort to achieve meaningful use of health information technology by clinicians and hospitals. This issue brief describes the extent of meaningful use in three countries with very high levels of health information technology adoption? Denmark, New Zealand, and Sweden. While all three have achieved high levels of meaningful use, none has reached 100 percent in all categories. The brief find high levels of meaningful use for EHR items and substantial information-sharing with other organizations or health authorities, although less information is shared with patients. Insights that may prove useful to the United States include providing economic incentives to encourage adoption and designating an organization to take responsibility for standardization and interoperability.

Grenier, C. (2011). "Structuring an integrated care system: interpreted through the enacted diversity of the actors involved-the case of a French healthcare network." Int J Integr Care **11**: e003.

RESEARCH QUESTION: We are looking at the process of structuring an integrated care system as an innovative process that swings back and forth between the diversity of the actors involved, local aspirations and national and regional regulations. We believe that innovation is enriched by the variety of the actors involved, but may also be blocked or disrupted by that diversity. Our research aims to add to other research, which, when questioning these integrated systems, analyses how the actors involved deal with diversity without really questioning it. CASE STUDY: The empirical basis of the paper is provided by case study analysis. The studied integrated care system is a French healthcare network that brings together healthcare professionals and various organisations in order to improve the way in which interventions are coordinated and formalised, in order to promote better detection and diagnosis procedures and the implementation of a care protocol. We consider this case as instrumental in developing theoretical proposals for structuring an integrated care system in light of the diversity of the actors involved. RESULTS AND DISCUSSION: We are proposing a model for structuring an integrated care system in light of the enacted diversity of the actors involved. This model is based on three factors: the diversity enacted by the leaders, three stances for considering the contribution made by diversity in the structuring process and the specific leading role played by those in charge of the structuring process. Through this process, they determined how the actors involved in the project were differentiated, and on what basis those actors were involved. By mobilising enacted diversity, the leaders are seeking to channel the emergence of a network in light of their own representation of that network. This model adds to published research on the structuring of integrated care systems.

Guo, U., et al. (2017). "Electronic health record innovations: Helping physicians - One less click at a time." Health Inf Manag **46**(3): 140-144.

BACKGROUND: Physician burnout is becoming an epidemic, due to the pressures of being productive, an imperfect electronic health record (EHR) system, and limited face-to-face time with patients. Poor usability in EHR-user interface can force users to go through more steps (i.e. more clicks on the computer) in accomplishing a task. OBJECTIVE: This increased 'click burden' is a source of frustration for physicians. In the light of increased click burden and time due to meaningful use requirements, there is a need to improve the physician's experience by creating innovations in EHR. METHOD: This case study describes an attempt by physicians at NewYork-Presbyterian Brooklyn Methodist Hospital

to enhance the EHR experience with more efficient methods of documentation, chart review, ordering and patient safety. RESULTS: The EHR innovations trialled in this study were: a mobile documentation application; abnormal test results auto-populated into an EHR patient summary; physician alerts to reduce inappropriate test ordering; and a system of safety alerts on a dashboard. These innovations led to decreased click burden and allowed physicians to spend less time on the computer and more time with patients. CONCLUSION: Physician-driven changes to EHR systems have the potential to streamline virtual workflows and the management of health information and to improve patient safety, reduce physician burnout and increase physician job satisfaction.

Gvozdanovic, D., et al. (2007). "National healthcare information system in Croatian primary care: the foundation for improvement of quality and efficiency in patient care." *Inform Prim Care* **15**(3): 181-185.

In order to improve the quality of patient care, while at the same time keeping up with the pace of increased needs of the population for healthcare services that directly impacts on the cost of care delivery processes, the Republic of Croatia, under the leadership of the Ministry of Health and Social Welfare, has formed a strategy and campaign for national public healthcare system reform. The strategy is very comprehensive and addresses all niches of care delivery processes; it is founded on the enterprise information systems that will aim to support end-to-end business processes in the healthcare domain. Two major requirements are in focus: (1) to provide efficient healthcare-related data management in support of decision-making processes; (2) to support a continuous process of healthcare resource spending optimisation. The first project is the Integrated Healthcare Information System (IHCIS) on the primary care level; this encompasses the integration of all primary point-of-care facilities and subjects with the Croatian Institute for Health Insurance and Croatian National Institute of Public Health. In years to come, IHCIS will serve as the main integration platform for connecting all other stakeholders and levels of health care (that is, hospitals, pharmacies, laboratories) into a single enterprise healthcare network. This article gives an overview of Croatian public healthcare system strategy aims and goals, and focuses on properties and characteristics of the primary care project implementation that started in 2003; it achieved a major milestone in early 2007 - the official grand opening of the project with 350 GPs already fully connected to the integrated healthcare information infrastructure based on the IHCIS solution.

Hage, E., et al. (2013). "Implementation factors and their effect on e-Health service adoption in rural communities: a systematic literature review." *BMC Health Serv Res* **13**: 19.

BACKGROUND: An ageing population is seen as a threat to the quality of life and health in rural communities, and it is often assumed that e-Health services can address this issue. As successful e-Health implementation in organizations has proven difficult, this systematic literature review considers whether this is so for rural communities. This review identifies the critical implementation factors and, following the change model of Pettigrew and Whipp, classifies them in terms of "context", "process", and "content". Through this lens, we analyze the empirical findings found in the literature to address the question: How do context, process, and content factors of e-Health implementation influence its adoption in rural communities? METHODS: We conducted a systematic literature review. This review included papers that met six inclusion and exclusion criteria and had sufficient methodological quality. Findings were categorized in a classification matrix to identify promoting and restraining implementation factors and to explore whether any interactions between context, process, and content affect adoption. RESULTS: Of the 5,896 abstracts initially identified, only 51 papers met all our criteria and were included in the review. We distinguished five different perspectives on rural e-Health implementation in these papers. Further, we list the context, process, and content implementation factors found to either promote or restrain rural e-Health adoption. Many implementation factors appear repeatedly, but there are also some contradictory results. Based on a further analysis of the papers' findings, we argue that interaction effects between context, process, and content elements of change may explain these contradictory results. More specifically, three themes that appear crucial in e-Health implementation in rural communities surfaced: the dual effects of geographical isolation, the targeting of underprivileged groups, and the changes in ownership required for sustainable e-Health adoption. CONCLUSIONS: Rural e-Health implementation is an emerging, rapidly developing, field. Too often, e-Health adoption fails due to underestimating implementation factors and their interactions. We argue that rural e-Health implementation only

leads to sustainable adoption (i.e. it "sticks") when the implementation carefully considers and aligns the e-Health content (the "clicks"), the pre-existing structures in the context (the "bricks"), and the interventions in the implementation process (the "tricks").

Harris, C., et al. (2015). "Development, implementation and evaluation of an evidence-based program for introduction of new health technologies and clinical practices in a local healthcare setting." BMC Health Serv Res **15**: 575.

BACKGROUND: This paper reports the process of establishing a transparent, accountable, evidence-based program for introduction of new technologies and clinical practices (TCPs) in a large Australian healthcare network. Many countries have robust evidence-based processes for assessment of new TCPs at national level. However many decisions are made by local health services where the resources and expertise to undertake health technology assessment (HTA) are limited and a lack of structure, process and transparency has been reported. **METHODS:** An evidence-based model for process change was used to establish the program. Evidence from research and local data, experience of health service staff and consumer perspectives were incorporated at each of four steps: identifying the need for change, developing a proposal, implementation and evaluation. Checklists assessing characteristics of success, factors for sustainability and barriers and enablers were applied and implementation strategies were based on these findings. Quantitative and qualitative methods were used for process and outcome evaluation. An action research approach underpinned ongoing refinement to systems, processes and resources. **RESULTS:** A Best Practice Guide developed from the literature and stakeholder consultation identified seven program components: Governance, Decision-Making, Application Process, Monitoring and Reporting, Resources, Administration, and Evaluation and Quality Improvement. The aims of transparency and accountability were achieved. The processes are explicit, decisions published, outcomes recorded and activities reported. The aim of ascertaining rigorous evidence-based information for decision-making was not achieved in all cases. Applicants proposing new TCPs provided the evidence from research literature and local data however the information was often incorrect or inadequate, overestimating benefits and underestimating costs. Due to these limitations the initial application process was replaced by an Expression of Interest from applicants followed by a rigorous HTA by independent in-house experts. **CONCLUSION:** The program is generalisable to most health care organisations. With one exception, the components would be achievable with minimal additional resources; the lack of skills and resources required for HTA will limit effective application in many settings. A toolkit containing details of the processes and sample materials is provided to facilitate replication or local adaptation by those wishing to establish a similar program.

Guo, U., et al. (2017). "Electronic health record innovations: Helping physicians - One less click at a time." Health Inf Manag **46**(3): 140-144.

BACKGROUND: Physician burnout is becoming an epidemic, due to the pressures of being productive, an imperfect electronic health record (EHR) system, and limited face-to-face time with patients. Poor usability in EHR-user interface can force users to go through more steps (i.e. more clicks on the computer) in accomplishing a task. **OBJECTIVE:** This increased 'click burden' is a source of frustration for physicians. In the light of increased click burden and time due to meaningful use requirements, there is a need to improve the physician's experience by creating innovations in EHR. **METHOD:** This case study describes an attempt by physicians at NewYork-Presbyterian Brooklyn Methodist Hospital to enhance the EHR experience with more efficient methods of documentation, chart review, ordering and patient safety. **RESULTS:** The EHR innovations trialled in this study were: a mobile documentation application; abnormal test results auto-populated into an EHR patient summary; physician alerts to reduce inappropriate test ordering; and a system of safety alerts on a dashboard. These innovations led to decreased click burden and allowed physicians to spend less time on the computer and more time with patients. **CONCLUSION:** Physician-driven changes to EHR systems have the potential to streamline virtual workflows and the management of health information and to improve patient safety, reduce physician burnout and increase physician job satisfaction.

Hayashi, Y., et al. (2016). "Reduction in the numbers of drugs administered to elderly in-patients with polypharmacy by a multidisciplinary review of medication using electronic medical records." Geriatr Gerontol Int.

AIM: Polypharmacy is a major problem for elderly patients in developed countries. We investigated whether a multidisciplinary medication review using electronic medical records could reduce the number of drugs administered to elderly patients receiving polypharmacy. METHODS: The present study included 432 elderly patients (188 women, 244 men; 267 patients aged 65-74 years and 165 patients aged ≥ 75 years) who were admitted to and discharged from the Department of Neurology and Geriatrics, Gifu University Hospital, between 2004 and 2011; those who died at the hospital were excluded. The names, categories, and numbers of orally administered drugs at admission and discharge were examined retrospectively using electronic medical records. The histories of continuous oral immunotherapy use at the hospital, falls during the 2 years before hospital admission and the presence of fall risk factors were also evaluated. P-values < 0.05 were considered statistically significant. RESULTS: On average 1.14 \pm 3.07 fewer types of drugs were given to patients at discharge than at admission in patients receiving polypharmacy ($P < 0.001$). However, the number of drugs given to patients undergoing continuous oral immunotherapy increased by 1.67 \pm 3.47 ($P < 0.001$). The number of drugs was reduced in 33.1% of fallers, and 36.3% of non-fallers. In both fallers and non-fallers, there was a reduction in drug categories associated with falls. CONCLUSIONS: Multidisciplinary medication review using electronic medical records could significantly reduce the numbers of drugs taken by elderly inpatients receiving polypharmacy, including drugs associated with falls, in both fallers and non-fallers *Geriatr Gerontol Int* 2016; **: **_**.

Hemant, K. B., et Mishra, A. (2011). Electronic Medical Records and Physician Productivity: Evidence from Panel Data Analysis. Rochester Social Science Electronic Publishing: 39 , tabl., fig.

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1952287

Physician productivity is an important driver of key healthcare outcomes, such as quality of care, treatment costs and patient satisfaction, because physicians influence a vast majority of treatment decisions, and are central to the care delivery process. Thus, it is critical for researchers to understand how transformation technologies, such as electronic medical records (EMRs) impact physician productivity. While researchers and policy makers in the United States have suggested that the implementation of EMRs can have significant beneficial impacts on patient safety, health care quality and overall costs of care delivery, the effects of EMRs on physicians themselves have been understudied in the literature. This paper examines the productivity impacts of EMR implementation on physicians. Its focus is to investigate if productivity impacts of EMR implementation depend on physician specialties and the duration for which the EMR has been implemented. This research is informed by extant work in physician productivity, IT productivity and task-technology fit theory. It uses a unique panel dataset comprising 87 physicians specializing in internal medicine, pediatrics and family practice in 12 primary care clinics of an academic hospital in a large state in the western United States. Its dataset contains 3,186 physician-month productivity observations collected over 39 months. It employs random effects model on this panel dataset to estimate the impact of EMR implementation on physician productivity. It finds that productivity impacts of EMR are contingent upon physician specialty and the time period for which an EMR has been implemented. Furthermore, we find that the stable stage impacts of EMR on various specialties are different from those in the transitory learning stage. These results emphasize the need for fine-grained analyses of productivity impacts of EMR implementation on physicians. It postulates that the fit provided by an EMR to the task requirements of physicians of various specialties is key to disentangling the productivity dynamics. It contributes to the nascent but emerging stream of literature that examines productivity implications of various information technologies among white color knowledge workers in the service industries.

Hermanowski, T. R., et al. (2015). "Institutional framework for integrated Pharmaceutical Benefits Management: results from a systematic review." Int J Integr Care 15: e036.

OBJECTIVES: In this paper, we emphasised that effective management of health plans beneficiaries access to reimbursed medicines requires proper institutional set-up. The main objective was to

identify and recommend an institutional framework of integrated pharmaceutical care providing effective, safe and equitable access to medicines. METHOD: The institutional framework of drug policy was derived on the basis of publications obtained by systematic reviews. A comparative analysis concerning adaptation of coordinated pharmaceutical care services in the USA, the UK, Poland, Italy, Denmark and Germany was performed. RESULTS: While most European Union Member States promote the implementation of selected e-Health tools, like e-Prescribing, these efforts do not necessarily implement an integrated package. There is no single agent who would manage an insured patients' access to medicines and health care in a coordinated manner, thereby increasing the efficiency and safety of drug policy. More attention should be paid by European Union Member States as to how to integrate various e-Health tools to enhance benefits to both individuals and societies. One solution could be to implement an integrated "pharmacy benefit management" model, which is well established in the USA and Canada and provides an integrated package of cost-containment methods, implemented within a transparent institutional framework and powered by strong motivation of the agent.

Hillestad, R., et al. (2008). Identity crisis : An Examination of the Costs and Benefits of a Unique Patient Identifier for the U.S. Health Care System. Santa Monica Rand corporation: 71 , tabl., annexes.
http://www.rand.org/pubs/monographs/2008/RAND_MG753.pdf

Correctly linking patients to their health data is a vital step in quality health care. The two primary approaches to this linking are the unique patient identifier (UPI) and statistical matching based on multiple personal attributes, such as name, address, and Social Security number (SSN). Lacking a UPI, most of the U.S. health care system uses statistical matching methods. There are important health, efficiency, security, and safety reasons for moving the country away from the inherent uncertainties of statistical approaches and toward a UPI for health care. In this monograph, we compare the linking alternatives on the basis of errors, cost, privacy and information security, and political considerations. We also discuss operational efficiency, ease of implementation, and some implications for improved health care.

Holroyd-Leduc, J. M., et al. (2011). "The impact of the electronic medical record on structure, process, and outcomes within primary care: a systematic review of the evidence." *J Am Med Inform Assoc* **18**(6): 732-737.

BACKGROUND: The electronic medical record (EMR)/electronic health record (EHR) is becoming an integral component of many primary-care outpatient practices. Before implementing an EMR/EHR system, primary-care practices should have an understanding of the potential benefits and limitations. OBJECTIVE: The objective of this study was to systematically review the recent literature around the impact of the EMR/EHR within primary-care outpatient practices. MATERIALS AND METHODS: Searches of Medline, EMBASE, CINAHL, ABI Inform, and Cochrane Library were conducted to identify articles published between January 1998 and January 2010. The gray literature and reference lists of included articles were also searched. 30 studies met inclusion criteria. RESULTS AND DISCUSSION: The EMR/EHR appears to have structural and process benefits, but the impact on clinical outcomes is less clear. Using Donabedian's framework, five articles focused on the impact on healthcare structure, 21 explored healthcare process issues, and four focused on health-related outcomes.

Holmgren, A. J. et Adler-Milstein, J. (2017). "Health Information Exchange in US Hospitals: The Current Landscape and a Path to Improved Information Sharing." *J Hosp Med* **12**(3): 193-198.

Electronic health information exchange (HIE) was a foundational goal of the 2009 Health Information Technology for Economic and Clinical Health (HITECH) Act, but 7 years later we are far from a nationally interoperable health system. Connected electronic health records have the potential to enable fast access to a wealth of clinical data and can deliver a solution to the highly fragmented US healthcare system. In this review, we present a history and background of HIE, including its potential to deliver significant cost savings to the healthcare system. We examine the key components of HIE, including exchanges, the mechanism, and options available to providers. Health information exchange faces significant challenges, ranging from technical issues to lack of a clear goal, but continued policy initiatives and new technologies represent a promising path to providing clinicians with routine, electronic patient data. *Journal of Hospital Medicine* 2017;12:193-198.

Huang, M. Z., et al. (2018). "Measuring Electronic Health Record Use in Primary Care: A Scoping Review." Appl Clin Inform **9**(1): 15-33.

BACKGROUND: Simple measures of electronic health record (EHR) adoption may be inadequate to evaluate EHR use; and positive outcomes associated with EHRs may be better gauged when varying degrees of EHR use are taken into account. In this article, we aim to assess the current state of the literature regarding measuring EHR use. **OBJECTIVE:** This article conducts a scoping review of the literature to identify and classify measures of primary care EHR use with a focus on the Canadian context. **METHODS:** We conducted a scoping review. Multiple citation databases were searched, as well as gray literature from relevant Web sites. Resulting abstracts were screened for inclusion. Included full texts were reviewed by two authors. Data from the articles were extracted; we synthesized the findings. Subsequently, we reviewed these results with seven EHR stakeholders in Canada. **RESULTS:** Thirty-seven articles were included. Eighteen measured EHR function use individually, while 19 incorporated an overall level of use. Eight frameworks for characterizing overall EHR use were identified. **CONCLUSION:** There is a need to create standardized frameworks for assessing EHR use.

Huber, M. T., et al. (2018). "Utilizing the Electronic Health Record to Improve Advance Care Planning: A Systematic Review." Am J Hosp Palliat Care **35**(3): 532-541.

PURPOSE: Advance care planning may ensure care that is concordant with patient wishes. However, advance care plans are frequently absent when needed due to failure to engage patients in planning, inability to access prior documentation, or poor documentation quality. Interventions utilizing tools within the electronic health record (EHR) may address these barriers at the point of care. We aimed to identify EHR interventions previously utilized to improve advance care plans. **METHODS:** We systematically searched 7 databases for observational and experimental studies of EHR interventions associated with advance care plans. We abstracted information on the study populations, EHR and non-EHR components of the interventions, and the efficacy for advance care plan-related outcomes. **RESULTS:** We identified 16 articles that contained an EHR intervention to improve advance care plans. Study populations, study designs, and EHR components of the interventions were heterogeneous. Documentation templates were the most common EHR tool reported (n = 8), followed by automated prompts (n = 7) and electronic order sets (n = 5). The most common reported outcomes were documentation of an advance care planning conversation in the EHR (n = 7) and the placement of code status orders (n = 7). All studies reporting efficacy (n = 9) demonstrated an improvement in 1 or more advance care planning outcomes. **CONCLUSIONS:** The use of EHR interventions may improve advance care plan completion and availability at the point of care. Further work should seek to develop and evaluate standardized EHR tools for advance care planning.

Hurley, E., et al. (2009). The Australian health care system : the potential for efficiency gains. A review of the literature. Canberra Australian Government: 66 , fig.

[http://www.nhhrc.org.au/internet/nhhrc/publishing.nsf/Content/A5665B8B9EAB34B2CA2575CB00184FB9/\\$File/Potential%20Efficiency%20Gains%20-%20NHHRC%20Background%20Paper.pdf](http://www.nhhrc.org.au/internet/nhhrc/publishing.nsf/Content/A5665B8B9EAB34B2CA2575CB00184FB9/$File/Potential%20Efficiency%20Gains%20-%20NHHRC%20Background%20Paper.pdf)

A key component of performance is efficiency. Other dimensions of performance include quality, effectiveness and equity. This paper reviews the available literature on the efficiency of the Australian health care system and the potential areas where gains might be made. The reform directions proposed in this Interim Report seek to improve efficiency in a variety of ways. These include: Using activity-based funding to drive the efficient delivery of services and other key outputs in the health system, including clinical education; Using economic assessments of the cost effectiveness of interventions to ensure funding goes to those interventions that will deliver the best outcomes for a given level of resources; Performance-based payments to encourage the achievement of high quality outcomes; and a rebalancing of the type of interventions delivered so that fewer people become ill and to ensure that when people need care they can receive the most appropriate service.

Johansen, M. A. et Henriksen, E. (2014). "The evolution of personal health records and their role for self-management: a literature review." Stud Health Technol Inform **205**: 458-462.

A literature review has been conducted to gain an overview of the evolution of personal health records (PHR) and their role for self-management. This paper presents this evolution overview, based on review of abstracts from relevant publications in addition to full-text review of reviews. A search in the Medline database for 'PHR' and 'self-management' identified 62 unique publications. Of these, 90 % met the inclusion and exclusion criteria. The number of studies per year has increased heavily since the PHR and self-management context originated in the early 1990s. Nine studies described messaging functionality, eleven studies described shared access functionalities, and four described both. However, the general evidence remains sparse to document the value of PHR for self-management. Most PHRs are not based on patients' needs and do not support self-management. To be adopted by the users, and to be useful for self-management, PHRs need to be integrated with physicians' EHR systems and provide shared access both ways in addition to secure e-mail communication and educational modules.

Keltie, K., et al. (2014). "Identifying complications of interventional procedures from UK routine healthcare databases: a systematic search for methods using clinical codes." *BMC Med Res Methodol* **14**: 126.

BACKGROUND: Several authors have developed and applied methods to routine data sets to identify the nature and rate of complications following interventional procedures. But, to date, there has been no systematic search for such methods. The objective of this article was to find, classify and appraise published methods, based on analysis of clinical codes, which used routine healthcare databases in a United Kingdom setting to identify complications resulting from interventional procedures. **METHODS:** A literature search strategy was developed to identify published studies that referred, in the title or abstract, to the name or acronym of a known routine healthcare database and to complications from procedures or devices. The following data sources were searched in February and March 2013: Cochrane Methods Register, Conference Proceedings Citation Index - Science, Econlit, EMBASE, Health Management Information Consortium, Health Technology Assessment database, MathSciNet, MEDLINE, MEDLINE in-process, OALster, OpenGrey, Science Citation Index Expanded and ScienceDirect. Of the eligible papers, those which reported methods using clinical coding were classified and summarised in tabular form using the following headings: routine healthcare database; medical speciality; method for identifying complications; length of follow-up; method of recording comorbidity. The benefits and limitations of each approach were assessed. **RESULTS:** From 3688 papers identified from the literature search, 44 reported the use of clinical codes to identify complications, from which four distinct methods were identified: 1) searching the index admission for specified clinical codes, 2) searching a sequence of admissions for specified clinical codes, 3) searching for specified clinical codes for complications from procedures and devices within the International Classification of Diseases 10th revision (ICD-10) coding scheme which is the methodology recommended by NHS Classification Service, and 4) conducting manual clinical review of diagnostic and procedure codes. **CONCLUSIONS:** The four distinct methods identifying complication from codified data offer great potential in generating new evidence on the quality and safety of new procedures using routine data. However the most robust method, using the methodology recommended by the NHS Classification Service, was the least frequently used, highlighting that much valuable observational data is being ignored.

Kongstad, L. P., et al. (2016). Can the use of Electronic Health Records in General Practice reduce hospitalizations for diabetes patients? Evidence from a natural experiment. *Working paper ; 16/25*. Londres University of York: 41, tabl., fig.

<https://www.york.ac.uk/media/economics/documents/hedg/workingpapers/1625.pdf>

Disease management programmes (DMP) in the general practice sector are increasingly used to improve health of chronically ill patients, reduce hospitalizations and thereby costs. The aim of this paper is to estimate the causal effects of the enrolment of general practices (GP) in a DMP based on Electronic Health Records (EHR) on diabetes patients total hospitalizations, diabetes related hospitalizations and hospitalizations with diabetes and cardiovascular related Ambulatory Care Sensitive Conditions (ACSC). We use a rich nationwide panel dataset (2004-2013) with information of stepwise enrolment of GPs in the EHR program. As a control group we use GPs who never enrolled. Following the recent literature on causal inference with panel data, we use a standard propensity score

matching estimator where we also match on pre-treatment outcomes. This allows controlling for all the unobservable confounders which were already present in the pre-treatment outcomes. Alternative, we use a difference in difference as well as a parametric model with a continuous treatment specification and find similar results. Our results show that enrolment in EHR reduced diabetes patients' risk of hospitalizations by more than 10%. The results are comparable with studies on EHR programs from California and the magnitudes of the effects are comparable to DMPs including both EHR and financial incentives.

Kruse, C. S., et al. (2016). "Barriers to Electronic Health Record Adoption: a Systematic Literature Review." *J Med Syst* **40**(12): 252.

Federal efforts and local initiatives to increase adoption and use of electronic health records (EHRs) continue, particularly since the enactment of the Health Information Technology for Economic and Clinical Health (HITECH) Act. Roughly one in four hospitals not adopted even a basic EHR system. A review of the barriers may help in understanding the factors deterring certain healthcare organizations from implementation. We wanted to assemble an updated and comprehensive list of adoption barriers of EHR systems in the United States. Authors searched CINAHL, MEDLINE, and Google Scholar, and accepted only articles relevant to our primary objective. Reviewers independently assessed the works highlighted by our search and selected several for review. Through multiple consensus meetings, authors tapered articles to a final selection most germane to the topic (n = 27). Each article was thoroughly examined by multiple authors in order to achieve greater validity. Authors identified 39 barriers to EHR adoption within the literature selected for the review. These barriers appeared 125 times in the literature; the most frequently mentioned barriers were regarding cost, technical concerns, technical support, and resistance to change. Despite federal and local incentives, the initial cost of adopting an EHR is a common existing barrier. The other most commonly mentioned barriers include technical support, technical concerns, and maintenance/ongoing costs. Policy makers should consider incentives that continue to reduce implementation cost, possibly aimed more directly at organizations that are known to have lower adoption rates, such as small hospitals in rural areas.

Kruse, C. S., et al. (2017). "Impact of Electronic Health Records on Long-Term Care Facilities: Systematic Review." *JMIR Med Inform* **5**(3): e35.

BACKGROUND: Long-term care (LTC) facilities are an important part of the health care industry, providing care to the fastest-growing group of the population. However, the adoption of electronic health records (EHRs) in LTC facilities lags behind other areas of the health care industry. One of the reasons for the lack of widespread adoption in the United States is that LTC facilities are not eligible for incentives under the Meaningful Use program. Implementation of an EHR system in an LTC facility can potentially enhance the quality of care, provided it is appropriately implemented, used, and maintained. Unfortunately, the lag in adoption of the EHR in LTC creates a paucity of literature on the benefits of EHR implementation in LTC facilities. **OBJECTIVE:** The objective of this systematic review was to identify the potential benefits of implementing an EHR system in LTC facilities. The study also aims to identify the common conditions and EHR features that received favorable remarks from providers and the discrepancies that needed improvement to build up momentum across LTC settings in adopting this technology. **METHODS:** The authors conducted a systematic search of PubMed, Cumulative Index of Nursing and Allied Health (CINAHL), and MEDLINE databases. Papers were analyzed by multiple referees to filter out studies not germane to our research objective. A final sample of 28 papers was selected to be included in the systematic review. **RESULTS:** Results of this systematic review conclude that EHRs show significant improvement in the management of documentation in LTC facilities and enhanced quality outcomes. Approximately 43% (12/28) of the papers reported a mixed impact of EHRs on the management of documentation, and 33% (9/28) of papers reported positive quality outcomes using EHRs. Surprisingly, very few papers demonstrated an impact on patient satisfaction, physician satisfaction, the length of stay, and productivity using EHRs. **CONCLUSIONS:** Overall, implementation of EHRs has been found to be effective in the few LTC facilities that have implemented them. Implementation of EHRs in LTC facilities caused improved management of clinical documentation that enabled better decision making.

Kruse, C. S., et al. (2015). "Patient and provider attitudes toward the use of patient portals for the management of chronic disease: a systematic review." *J Med Internet Res* **17**(2): e40.

BACKGROUND: Patient portals provide patients with the tools to better manage and understand their health status. However, widespread adoption of patient portals faces resistance from patients and providers for a number of reasons, and there is limited evidence evaluating the characteristics of patient portals that received positive remarks from patients and providers. **OBJECTIVE:** The objectives of this systematic review are to identify the shared characteristics of portals that receive favorable responses from patients and providers and to identify the elements that patients and providers believe need improvement. **METHODS:** The authors conducted a systematic search of the CINAHL and PubMed databases to gather data about the use of patient portals in the management of chronic disease. Two reviewers analyzed the articles collected in the search process in order to remove irrelevant articles. The authors selected 27 articles to use in the literature review. **RESULTS:** Results of this systematic review conclude that patient portals show significant improvements in patient self-management of chronic disease and improve the quality of care provided by providers. The most prevalent positive attribute was patient-provider communication, which appeared in 10 of 27 articles (37%). This was noted by both patients and providers. The most prevalent negative perceptions are security (concerns) and user-friendliness, both of which occurred in 11 of 27 articles (41%). The user-friendliness quality was a concern for patients and providers who are not familiar with advanced technology and therefore find it difficult to navigate the patient portal. The high cost of installation and maintenance of a portal system, not surprisingly, deters some providers from implementing such technology into their practice, but this was only mentioned in 3 of the 27 articles (11%). It is possible that the incentives for meaningful use assuage the barrier of cost. **CONCLUSIONS:** This systematic review revealed mixed attitudes from patients and their providers regarding the use of patient portals to manage their chronic disease. The authors suggest that a standard patient portal design providing patients with the resources to understand and manage their chronic conditions will promote the adoption of patient portals in health care organizations.

Kruse, C. S., et al. (2017). "Security Techniques for the Electronic Health Records." *J Med Syst* **41**(8): 127.

The privacy of patients and the security of their information is the most imperative barrier to entry when considering the adoption of electronic health records in the healthcare industry. Considering current legal regulations, this review seeks to analyze and discuss prominent security techniques for healthcare organizations seeking to adopt a secure electronic health records system. Additionally, the researchers sought to establish a foundation for further research for security in the healthcare industry. The researchers utilized the Texas State University Library to gain access to three online databases: PubMed (MEDLINE), CINAHL, and ProQuest Nursing and Allied Health Source. These sources were used to conduct searches on literature concerning security of electronic health records containing several inclusion and exclusion criteria. Researchers collected and analyzed 25 journals and reviews discussing security of electronic health records, 20 of which mentioned specific security methods and techniques. The most frequently mentioned security measures and techniques are categorized into three themes: administrative, physical, and technical safeguards. The sensitive nature of the information contained within electronic health records has prompted the need for advanced security techniques that are able to put these worries at ease. It is imperative for security techniques to cover the vast threats that are present across the three pillars of healthcare.

Kumar, M., et al. (2017). "Research gaps in routine health information system design barriers to data quality and use in low- and middle-income countries: A literature review." *Int J Health Plann Manage*.

Despite the potential impact of health information system (HIS) design barriers on health data quality and use and, ultimately, health outcomes in low- and middle-income countries (LMICs), no comprehensive literature review has been conducted to study them in this context. We therefore conducted a formal literature review to understand system design barriers to data quality and use in LMICs and to identify any major research gaps related to understanding how system design affects data use. We conducted an electronic search across 4 scientific databases-PubMed, Web of Science, Embase, and Global Health-and consulted a data use expert. Following a systematic inclusion and exclusion process, 316 publications (316 abstracts and 18 full papers) were included in the review. We found a paucity of scientific publications that explicitly describe

system design factors that hamper data quality or data use for decision making. Although user involvement, work flow, human-computer interactions, and user experience are critical aspects of system design, our findings suggest that these issues are not discussed or conceptualized in the literature. Findings also showed that individual training efforts focus primarily on imparting data analysis skills. The adverse impact of HIS design barriers on data integrity and health system performance may be even bigger in LMICs than elsewhere, leading to errors in population health management and clinical care. We argue for integrating systems thinking into HIS strengthening efforts to reduce the HIS design

Kushniruk, A. W., et al. (2013). "National efforts to improve health information system safety in Canada, the United States of America and England." *Int J Med Inform* **82**(5): e149-160.

OBJECTIVE: In this paper we review progress as well as challenges encountered in Canada, the United States and England with regard to ensuring safety of health information technology. **METHOD:** A review of major programs and initiatives for ensuring safety of health information technology in the three countries was conducted. Published literature and Web resources from national programs were reviewed for relevant information. **RESULTS:** It was found that in all three countries the issue of technology-induced error has been recognized as being of critical importance. The three countries have developed approaches for dealing with the issue that have some commonalities; however, they are at varying different stages of maturity, with England having the longest standing and most well developed safety programs, while Canada and the United States are at earlier stages. The types of approaches employed have included work on developing standards related to usability and interface design, certifications, directives from regulatory bodies, educational initiatives in health information technology (HIT) safety as well as research into safer HIT design and implementation methods. **CONCLUSIONS:** HIT promises to lead to improved patient safety. However, it has become recognized that if not designed and deployed appropriately, such systems can lead to new types of errors. Based on this recognition, a variety of initiatives are being undertaken in Canada, the United States and England to promote the safe design, procurement and deployment of HIT. It is concluded that improved approaches to system design, testing, regulation, error reporting, safety education and cross-country collaboration will be needed to further promote safer HIT.

Lee, J., et al. (2012). The Impact of Health Information Technology on Hospital Productivity. *NBER Working Paper Series* ; n° 18025. Cambridge NBER: 37 , tabl., annexes.
<http://www.nber.org/papers/w18025>

The US health care sector is, by most accounts, extraordinarily inefficient. Health information technology (IT) has been championed as a tool that can transform health care delivery. Recently, the federal government has taken an active role in promoting health IT diffusion. There is little systematic analysis of the causal impact of health IT on productivity or whether private and public returns to health IT diverge thereby justifying government intervention. We estimate the parameters of a value-added hospital production function correcting for endogenous input choices in order to assess the private returns hospitals earn from health IT. Despite high marginal products, the potential benefits from expanded IT adoption are modest. Over the span of our data, health IT inputs increased by more than 210% and contributed about 6% to the increase in value-added. Virtually all the increase in value-added is attributable to the increased use of inputs{there was little change in hospital multi-factor productivity. Not-for-profits invested more heavily and differently in IT than for-profit hospitals. Finally, we find no evidence of labor complementarities or network externalities from health IT.

Lehmann, M., et al. (2015). "Enhancing medical coding through nurses' notes." *Journal De Gestion Et D'economie Medicales* **33**(1): 61-71.

[BDSP. Notice produite par ORSRA R0xjn88l. Diffusion soumise à autorisation]. Introduction : Le codage de l'information médicale est une fonction stratégique des établissements de soins qui tend à se renforcer à partir de différentes sources de données. Le CHU de Montpellier a mis en place en 2013 un outil d'optimisation du codage basé sur les transmissions infirmières. L'objectif de l'étude était d'évaluer l'impact de cet outil sur l'incidence de certains diagnostics associés significatifs et sur la valorisation des séjours. Méthodes : L'outil génère automatiquement des alertes basées sur la recherche de mots clés dans les transmissions infirmières. Les RSS concernés sont ensuite revus et

modifiés le cas échéant par le DIM. Résultats : Les deux-tiers des 13 977 RSS contrôlés en 2013 par le DIM ont fait l'objet d'au moins une alerte et au moins un DAS a été ajouté pour 1 480 d'entre eux (16.2%). L'incidence des DAS concernés a augmenté de plus de 50% par rapport à 2012. Le différentiel de valorisation moyen était de 1 122 Euros par RSS modifié. Conclusion : L'utilisation des transmissions infirmières pour optimiser le codage PMSI est prometteuse et constitue un moyen de valoriser le travail soignant. En revanche sa généralisation est dépendante de l'évolution des systèmes d'information hospitaliers. (résumé auteur).

Lewis, J., et al. (2016). "Recent Worldwide Developments in eHealth and mHealth to more Effectively Manage Cancer and other Chronic Diseases - A Systematic Review." *Yearb Med Inform*(1): 93-108.

OBJECTIVES: This paper is a systematic literature review intended to gain an understanding of the most original, excellent, state-of-the-art research in the application of eHealth (including mHealth) in the management of chronic diseases with a focus on cancer over the past two years. METHOD: This review looks at peer-reviewed papers published between 2013 and 2015 and examines the background and trends in this area. It systematically searched peer-reviewed journals in databases PubMed, Proquest, Cochrane Library, Elsevier, Sage and the Institute of Electrical and Electronic Engineers (IEEE Digital Library) using a set of pre-defined keywords. It then employed an iterative process to filter out less relevant publications. RESULTS: From an initial search return of 1,519,682 results returned, twenty nine of the most relevant peer reviewed articles were identified as most relevant. CONCLUSIONS: Based on the results we conclude that innovative eHealth and its subset mHealth initiatives are rapidly emerging as an important means of managing cancer and other chronic diseases. The adoption is following different paths in the developed and developing worlds. Besides governance and regulatory issues, barriers still exist around information management, interoperability and integration. These include medical records available online information for clinicians and consumers on cancer and other chronic diseases, mobile app bundles that can help manage co-morbidities and the capacity of supporting communication technologies.

Lin, J., et al. (2013). "Application of electronic medical record data for health outcomes research: a review of recent literature." *Expert Rev Pharmacoecon Outcomes Res* **13**(2): 191-200.

Electronic medical records (EMRs) have become a common source of data for outcomes research. This review discusses trends in EMR data use for outcomes research as well as strengths and limitations, and likely future developments to help optimize value and use of EMR data for outcomes research. EMR-based studies reporting treatment outcomes published between 2007 and 2012 were predominantly from the USA and Europe. There has been a substantial increase in the number of EMR-based outcomes studies published from 2007-2008 (n = 28) to 2010-2011 (n = 55). Many studies evaluated biometric and laboratory test outcomes in common chronic conditions. However, researchers are expanding the scope of evaluated diseases and outcomes using advanced techniques, such as natural language processing and linking EMRs to other patient-level data to overcome issues with missing data or data that cannot be accessed using standard queries. These advances will help to expand the scope and sophistication of outcomes research in the coming years.

Lizano-Diez, I., et al. (2014). "Evaluation of electronic prescription implementation in polymedicated users of Catalonia, Spain: a population-based longitudinal study." *Bmj Open* **4**(11): 1-9.
<http://bmjopen.bmj.com/content/4/11/e006177.abstract>

To assess whether electronic prescribing is a comprehensive health management tool that may contribute to rational drug use, particularly in polymedicated patients receiving 16 or more medications in the public healthcare system in the Barcelona Health Region (BHR).

Ludwick, D., et al. (2010). "Primary care physicians' experiences with electronic medical records: implementation experience in community, urban, hospital, and academic family medicine." *Can Fam Physician* **56**(1): 40-47.

OBJECTIVE: To understand how remuneration and care setting affect the implementation of electronic medical records (EMRs). DESIGN: Semistructured interviews were used to illicit descriptions from

community-based family physicians (paid on a fee-for-service basis) and from urban, hospital, and academic family physicians (remunerated via alternative payment models or sessional pay for activities pertaining to EMR implementation). SETTING: Small suburban community and large urban-, hospital-, and academic-based family medicine clinics in Alberta. All participants were supported by a jurisdictional EMR certification funding mechanism. PARTICIPANTS: Physicians who practised in 1 or a combination of the above settings and had experience implementing and using EMRs. METHODS: Purposive and maximum variation sampling was used to obtain descriptive data from key informants through individually conducted semistructured interviews. The interview guide, which was developed from key findings of our previous literature review, was used in a previous study of community-based family physicians on this same topic. Field notes were analyzed to generate themes through a comparative immersion approach. MAIN FINDINGS: Physicians in urban, hospital, and academic settings leverage professional working relationships to investigate EMRs, a resource not available to community physicians. Physicians in urban, hospital, and academic settings work in larger interdisciplinary teams with a greater need for interdisciplinary care coordination, EMR training, and technical support. These practices were able to support the cost of project management or technical support resources. These physicians followed a planned system rollout approach compared with community physicians who installed their systems quickly and required users to transition to the new system immediately. Electronic medical records did not increase, or decrease, patient throughput. Physicians developed ways of including patients in the note-taking process. CONCLUSION: We studied physicians' procurement approaches under various payment models. Our findings do not suggest that one remuneration approach supports EMR adoption any more than another. Rather, this study suggests that stronger physician professional networks used in information gathering, more complete training, and in-house technical support might be more influential than remuneration in facilitating the EMR adoption experience.

Makowsky, M. J., et al. (2017). "Exploring Electronic Medical Record and Self-Administered Medication Risk Screening Tools in a Primary Care Clinic." *J Manag Care Spec Pharm* **23**(5): 566-572.

BACKGROUND: Electronic medical record (EMR) screening for indicators of medication risk could improve efficiency in identifying primary care clinic patients in need of clinical pharmacist care compared with patient self-reporting. OBJECTIVES: To (a) compare the performance of an EMR medication risk assessment questionnaire (MRAQ) with a self-administered (SA) MRAQ and (b) explore each tool's ability to predict indicators of health behavior, health status, and health care utilization. METHODS: A prospective cohort study was conducted with 143 adults who attended an academic family medicine center and were taking ≥ 2 medications. All participants completed the 10-item SA-MRAQ, Morisky Medication Adherence Scale, Chew's health literacy screener, Stanford Health Distress Scale, and SF-36 overall rating of health. A blinded investigator completed the EMR-MRAQ and a chart review to ascertain 6 months of health care utilization. Outcome measures included the following: (a) scores from the 5- and 10-item SA-MRAQs and 5-item EMR-MRAQ; (b) sensitivity and specificity to determine the accuracy of the 5-item EMR versus the 5-item SA risk scores; (c) correlations between risk assessments and health behavior/status scales; and (d) area under the receiver operator curve to determine how well a high-risk score predicted health care utilization. RESULTS: The 5-item SA-MRAQ, the 5-item EMR-MRAQ, and the 10-item SA-MRAQ categorized 52.9% (55/104), 69.2% (99/143), and 17.6% (18/102) of participants as high risk, respectively. For the 104 participants who completed both 5-item MRAQ tools, the EMR-MRAQ had a sensitivity of 81.8% and specificity of 49.0% in detecting a high-risk SA-MRAQ score. Both 5-item risk assessments showed weak correlations with health distress and overall health, while the 10-item SA-MRAQ additionally showed weak correlations with medication adherence. The EMR-MRAQ was most effective in predicting all-cause emergency room visits/hospitalization (c-statistic = 0.69; 95% CI=0.57-0.81) and high clinic utilization (≥ 4 visits per 6 months; c-statistic = 0.77; 95% CI = 0.69-0.85). The EMR-MRAQ had high sensitivities but low specificities for these health care utilization outcomes, respectively (82.6% and 33.3%; 88.9% and 42.7%). CONCLUSIONS: This pilot study suggests that EMR-MRAQ screening has high sensitivity but low specificity in comparison with self-reporting and was able to discriminate between those who would and would not experience health care utilization outcomes. These results justify further development and validation of an automated EMR-based tool to predict patient-important consequences of medication-related problems. DISCLOSURES: This work was funded by the Canadian Society of Hospital Pharmacists Research and Education Foundation, which had no role in the analysis

or interpretation of data or the decision to submit the manuscript for publication. The authors have no conflict of interests, potential or otherwise, to report. Makowsky had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design were contributed by Makowsky and Cor. Makowsky and Wong collected the data, and data interpretation was performed by Makowsky, Cor, and Wong. The manuscript was written by Makowsky and was critically reviewed for intellectual content by Makowsky, Cor, and Wong.

Mastebroek, M., et al. (2014). "Health information exchange in general practice care for people with intellectual disabilities--a qualitative review of the literature." *Res Dev Disabil* **35**(9): 1978-1987.

Many barriers to the provision of general practice (GP) care for people with intellectual disabilities (ID) relate to problems in exchanging health information. Deficits in the exchange of health information may have an adverse impact on healthcare access and health outcomes in individuals with ID. The aim of this paper is to report how health information exchange (HIE) in GP care for people with ID is being described in the ID healthcare literature. Thematic analysis of 19 included articles resulted in six major themes: (1) communication skills; (2) organisational factors; (3) record keeping and sharing; (4) health literacy and self-advocacy; (5) carers and health professionals' knowledge; and (6) third parties. The results indicate that HIE takes place in a chain of events happening before, during, and after a medical consultation, depending on specific contextual care factors. The included papers lack a broad focus on the entire HIE process, and causes and effects of gaps in health information are described only marginally or on a very general level. However, a study of the HIE process in its entirety is imperative in order to identify weak links and gaps in information pathways. The themes presented here provide a starting point for an in-depth study on the HIE process in GP care for individuals with ID that may facilitate future research on health interventions in this setting.

McGinn, C. A., et al. (2012). "Users' perspectives of key factors to implementing electronic health records in Canada: a Delphi study." *BMC Med Inform Decis Mak* **12**: 105.

BACKGROUND: Interoperable electronic health record (EHR) solutions are currently being implemented in Canada, as in many other countries. Understanding EHR users' perspectives is key to the success of EHR implementation projects. This Delphi study aimed to assess in the Canadian context the applicability, the importance, and the priority of pre-identified factors from a previous mixed-methods systematic review of international literature. **METHODS:** A three-round Delphi study was held with representatives of 4 Canadian EHR user groups defined as partners of the implementation process who use or are expected to use EHR in their everyday activity. These groups are: non-physician healthcare professionals, health information professionals, managers, and physicians. Four bilingual online questionnaire versions were developed from factors identified by the systematic review. Participants were asked to rate the applicability and the importance of each factor. The main outcome measures were consensus and priority. Consensus was defined a priori as strong ($\geq 75\%$) or moderate ($\geq 60-74\%$) according to user groups' level of agreement on applicability and importance, partial ($\geq 60\%$) when participants agreed only on applicability or importance, or as no consensus ($< 60\%$). Priority for decision-making was defined as factors with strong consensus with scores of 4 or 5 on a five-point Likert scale for applicability and importance. **RESULTS:** Three Delphi rounds were completed by 64 participants. Levels of consensus of 100%, 64%, 64%, and 44% were attained on factors submitted to non-physician healthcare professionals, health information professionals, managers, and physicians, respectively. While agreement between and within user groups varied, key factors were prioritized if they were classified as strong ($\geq 75\%$ from questionnaire answers of user groups), for decision-making concerning EHR implementation. The 10 factors that were prioritized are perceived usefulness, productivity, motivation, participation of end-users in the implementation strategy, patient and health professional interaction, lack of time and workload, resources availability, management, outcome expectancy, and interoperability. **CONCLUSIONS:** Amongst all factors influencing EHR implementation identified in a previous systematic review, ten were prioritized through this Delphi study. The varying levels of agreement between and within user groups could mean that users' perspectives of each factor are complex and that each user group has unique professional priorities and roles in the EHR implementation process. As more EHR implementations in

Canada are completed it will be possible to corroborate this preliminary result with a larger population of EHR users.

McGinn, C. A., et al. (2011). "Comparison of user groups' perspectives of barriers and facilitators to implementing electronic health records: a systematic review." *BMC Med* **9**: 46.

BACKGROUND: Electronic health record (EHR) implementation is currently underway in Canada, as in many other countries. These ambitious projects involve many stakeholders with unique perceptions of the implementation process. EHR users have an important role to play as they must integrate the EHR system into their work environments and use it in their everyday activities. Users hold valuable, first-hand knowledge of what can limit or contribute to the success of EHR implementation projects. A comprehensive synthesis of EHR users' perceptions is key to successful future implementation. This systematic literature review was aimed to synthesize current knowledge of the barriers and facilitators influencing shared EHR implementation among its various users. **METHODS:** Covering a period from 1999 to 2009, a literature search was conducted on nine electronic databases. Studies were included if they reported on users' perceived barriers and facilitators to shared EHR implementation, in healthcare settings comparable to Canada. Studies in all languages with an empirical study design were included. Quality and relevance of the studies were assessed. Four EHR user groups were targeted: physicians, other health care professionals, managers, and patients/public. Content analysis was performed independently by two authors using a validated extraction grid with pre-established categorization of barriers and facilitators for each group of EHR users. **RESULTS:** Of a total of 5,695 potentially relevant publications identified, 117 full text publications were obtained after screening titles and abstracts. After review of the full articles, 60 publications, corresponding to 52 studies, met the inclusion criteria. The most frequent adoption factors common to all user groups were design and technical concerns, ease of use, interoperability, privacy and security, costs, productivity, familiarity and ability with EHR, motivation to use EHR, patient and health professional interaction, and lack of time and workload. Each user group also identified factors specific to their professional and individual priorities. **CONCLUSIONS:** This systematic review presents innovative research on the barriers and facilitators to EHR implementation. While important similarities between user groups are highlighted, differences between them demonstrate that each user group also has a unique perspective of the implementation process that should be taken into account.

McGrath, J. M., et al. (2007). "The influence of electronic medical record usage on non verbal communication in the medical interview." *Health Informatics Journal* **13**(2): 105-118.

Mekonnen, A. B., et al. (2016). "Impact of electronic medication reconciliation interventions on medication discrepancies at hospital transitions: a systematic review and meta-analysis." *BMC Med Inform Decis Mak* **16**: 112.

BACKGROUND: Medication reconciliation has been identified as an important intervention to minimize the incidence of unintentional medication discrepancies at transitions in care. However, there is a lack of evidence for the impact of information technology on the rate and incidence of medication discrepancies identified during care transitions. This systematic review was thus, aimed to evaluate the impact of electronic medication reconciliation interventions on the occurrence of medication discrepancies at hospital transitions. **METHODS:** Systematic literature searches were performed in MEDLINE, PubMed, CINAHL, and EMBASE from inception to November, 2015. We included published studies in English that evaluated the effect of information technology on the incidence and rate of medication discrepancies compared with usual care. Cochrane's tools were used for assessment of the quality of included studies. We performed meta-analyses using random-effects models. **RESULTS:** Ten studies met our inclusion criteria; of which only one was a randomized controlled trial. Interventions were carried out at various hospital transitions (admission, 5; discharge, 2 and multiple transitions, 3 studies). Meta-analysis showed a significant reduction of 45 % in the proportion of medications with unintentional discrepancies after the use of electronic medication reconciliation (RR 0.55; 95 % CI 0.51 to 0.58). However, there was no significant reduction in either the proportion of patients with medication discrepancies or the mean number of discrepancies per patient. Drug omissions were the most common types of unintended discrepancies, and with an electronic tool a significant but heterogeneously distributed reduction of omission errors over the total number of medications

reconciled have been observed (RR 0.20; 95 % CI 0.06 to 0.66). The clinical impact of unintended discrepancies was evaluated in five studies, and there was no potentially fatal error identified and most errors were minor in severity. CONCLUSION: Medication reconciliation supported by an electronic tool was able to minimize the incidence of medications with unintended discrepancy, mainly drug omissions. But, this did not consistently reduce other process outcomes, although there was a lack of rigorous design to conform these results.

Merandi, J., et al. (2013). "Improvement of medication event interventions through use of an electronic database." *Am J Health Syst Pharm* **70**(19): 1708-1714.

PURPOSE: Patient safety enhancements achieved through the use of an electronic Web-based system for responding to adverse drug events (ADEs) are described. SUMMARY: A two-phase initiative was carried out at an academic pediatric hospital to improve processes related to "medication event huddles" (interdisciplinary meetings focused on ADE interventions). Phase 1 of the initiative entailed a review of huddles and interventions over a 16-month baseline period during which multiple databases were used to manage the huddle process and staff interventions were assigned via manually generated e-mail reminders. Phase 1 data collection included ADE details (e.g., medications and staff involved, location and date of event) and the types and frequencies of interventions. Based on the phase 1 analysis, an electronic database was created to eliminate the use of multiple systems for huddle scheduling and documentation and to automatically generate e-mail reminders on assigned interventions. In phase 2 of the initiative, the impact of the database during a 5-month period was evaluated; the primary outcome was the percentage of interventions documented as completed after database implementation. During the postimplementation period, 44.7% of assigned interventions were completed, compared with a completion rate of 21% during the preimplementation period, and interventions documented as incomplete decreased from 77% to 43.7% ($p < 0.0001$). Process changes, education, and medication order improvements were the most frequently documented categories of interventions. CONCLUSION: Implementation of a user-friendly electronic database improved intervention completion and documentation after medication event huddles.

Merrill, J. A., et al. (2013). "A system dynamics evaluation model: implementation of health information exchange for public health reporting." *J Am Med Inform Assoc* **20**(e1): e131-138.

OBJECTIVE: To evaluate the complex dynamics involved in implementing electronic health information exchange (HIE) for public health reporting at a state health department, and to identify policy implications to inform similar implementations. MATERIALS AND METHODS: Qualitative data were collected over 8 months from seven experts at New York State Department of Health who implemented web services and protocols for querying, receipt, and validation of electronic data supplied by regional health information organizations. Extensive project documentation was also collected. During group meetings experts described the implementation process and created reference modes and causal diagrams that the evaluation team used to build a preliminary model. System dynamics modeling techniques were applied iteratively to build causal loop diagrams representing the implementation. The diagrams were validated iteratively by individual experts followed by group review online, and through confirmatory review of documents and artifacts. RESULTS: Three casual loop diagrams captured well-recognized system dynamics: Sliding Goals, Project Rework, and Maturity of Resources. The findings were associated with specific policies that address funding, leadership, ensuring expertise, planning for rework, communication, and timeline management. DISCUSSION: This evaluation illustrates the value of a qualitative approach to system dynamics modeling. As a tool for strategic thinking on complicated and intense processes, qualitative models can be produced with fewer resources than a full simulation, yet still provide insights that are timely and relevant. CONCLUSIONS: System dynamics techniques clarified endogenous and exogenous factors at play in a highly complex technology implementation, which may inform other states engaged in implementing HIE supported by federal Health Information Technology for Economic and Clinical Health (HITECH) legislation.

Miani, C., et al. (2014). Health and Healthcare: Assessing the Real-World Data Policy Landscape in Europe. Santa-Monica Rand Corporation: 99 , tabl., annexes.

http://www.rand.org/content/dam/rand/pubs/research_reports/RR500/RR544/RAND_RR544.pdf

Real-world data (RWD) is an umbrella term for different types of data that are not collected in conventional randomised controlled trials. RWD in the healthcare sector comes from various sources and includes patient data, data from clinicians, hospital data, data from payers and social data. There are already examples of ways in which research has contributed to the provision, construction and capture of RWD to improve health outcomes. However, to maximise the potential of these new pools of data in the healthcare sector, stakeholders need to identify pathways and processes which will allow them to efficiently access and use RWD in order to achieve better research outcomes and improved healthcare delivery. Current efforts to improve access to RWD and facilitate its use take place in a context of resource scarcity. Based on a literature review, case studies, a small set of interviews of experts from public and private organisations and a scenario based workshop, the study outlined possible strategies to illustrate how RWD standards development could facilitate RWD-based research. By investigating the current forms and uses of RWD in Europe, this study has highlighted their significant potential for assessing the (short- or long-term) impact of different drugs or medical treatments and for informing and improving healthcare service delivery. Although the potential of RWD use seems quite clear, this research reveals barriers that restrict further development towards its full exploitation: the absence of common standards for defining the content and quality of RWD; methodological barriers that may limit the potential benefits of RWD analysis; governance issues underlying the absence of standards for collaboration between stakeholders; privacy concerns and binding data protection legislation which can be seen to restrict access and use of data.

Michalowsky, B., et al. (2016). "[Financing Regional Dementia Networks in Germany: Determinants of Sustainable Healthcare Networks]." Gesundheitswesen.

Objectives: Analysis of practice-based financing concepts in German dementia networks (DN); Provision of sustainable financing structures and their determinants in DN. Materials and Methods: Qualitative expert interviews with leaders of 13 DN were conducted. A semi-structured interview guide was used to analyse four main topics: Finance-related organization, cost, sources of funding and financial sustainability. Results: DN were primarily financed by membership fees, earnings of services provided, public funds and payments by municipalities or health care providers. 63% of the DN reported a financial sustainability. Funds to support the interpersonal expanding, a mix of internal and external financing sources and investments of the municipality were determinants of a sustainable financing. Overall, DN in rural areas seemed to be disadvantaged due to a lack of potential linkable service providers. Conclusion: DN in urban regions are more likely able to gather sustainable funding resources. A minimum funding of 50.000 euro/year for human resources coordinating the DN, seems to be a threshold for a sustainable DN.

Millard, P. S., et al. (2012). "Open-source point-of-care electronic medical records for use in resource-limited settings: systematic review and questionnaire surveys." Bmj Open 2(4).

BACKGROUND: Point-of-care electronic medical records (EMRs) are a key tool to manage chronic illness. Several EMRs have been developed for use in treating HIV and tuberculosis, but their applicability to primary care, technical requirements and clinical functionalities are largely unknown. OBJECTIVES: This study aimed to address the needs of clinicians from resource-limited settings without reliable internet access who are considering adopting an open-source EMR. STUDY ELIGIBILITY CRITERIA: Open-source point-of-care EMRs suitable for use in areas without reliable internet access. STUDY APPRAISAL AND SYNTHESIS METHODS: The authors conducted a comprehensive search of all open-source EMRs suitable for sites without reliable internet access. The authors surveyed clinician users and technical implementers from a single site and technical developers of each software product. The authors evaluated availability, cost and technical requirements. RESULTS: The hardware and software for all six systems is easily available, but they vary considerably in proprietary components, installation requirements and customisability. LIMITATIONS: This study relied solely on self-report from informants who developed and who actively use the included products. CONCLUSIONS AND IMPLICATIONS OF KEY FINDINGS: Clinical functionalities vary greatly among the systems, and none of the systems yet meet minimum requirements for effective implementation in a primary care resource-limited setting. The safe prescribing of medications is a particular concern with current tools. The dearth of fully functional EMR systems indicates a need for a greater emphasis by

global funding agencies to move beyond disease-specific EMR systems and develop a universal open-source health informatics platform.

Minard, J. P., et al. (2010). "Asthma electronic medical records in primary care: an integrative review." *J Asthma* **47**(8): 895-912.

BACKGROUND: Quality management, evaluation, and surveillance of asthma may be enhanced by access to and utilization of an asthma electronic medical record (EMR) in primary care. **PURPOSE:** To describe the current status, support tools, and utility of asthma EMRs in primary care. **METHODS:** An integrative review of the literature published between 1996 and 2008 was completed using Ovid MEDLINE, EMBASE, and CINAHL databases. Key search terms included asthma, medical records, computerized, primary health care, primary care, family physician, family practice, chronic disease, COPD, neoplasm, diabetes mellitus, and cardiovascular disease. Articles related to concepts, systems in development, and sources such as acute care and pharmacy EMRs were excluded. Each article was reviewed by two reviewers. **RESULTS:** Of 309 articles identified, 76 met the inclusion criteria. Twenty-two percent were specific to asthma, 78% pertained to other chronic diseases and/or the overall status of an EMR in primary care. The literature varied in methodology, topics of discussion and value of data. Articles describing an asthma EMR most often reported on decision support tools (n = 3) and/or utility (n = 14), specifically the ability to predict mortality and assess severity and timeliness of diagnosis. A primary care EMR containing a validated asthma minimum data set was not found. Three themes emerged from the review: status (description of users, functionalities and adoption issues), tools (decision support tools to enhance knowledge uptake), and utility (data quality, extraction and outcomes). **CONCLUSIONS:** There is a paucity of asthma elements in EMRs in primary care, with the exception of discussion of decision support tools and utility. Integration of a more robust asthma EMR in primary care, including a minimum data set, standardized terminology, and validated indicators, may further enhance care and enable outcomes monitoring.

Minshall, S. (2013). "A review of healthcare information system usability & safety." *Stud Health Technol Inform* **183**: 151-156.

Healthcare information systems have been designed to increase the efficiency and safety of healthcare processes. Systems such as electronic health records and pervasive computing devices have been shown to improve the safety of healthcare. However, increasing research has indicated that the design of such systems, in particular the user interface, may be related to increased incidence of other types of error. In this review, the relationship between human factors and usability will be considered in the context of designing safe and effective healthcare applications, with a focus on hand-held computing devices. Medline was searched for the specific terms listed below and restricted to the date ranges 2006-01-01 through to 2011-03-03: (error AND technology AND human factors); (error AND (CPOE OR (Computerized AND provider AND order AND entry))); (Technology AND Induced AND Error). The returned list of papers was screened by examining titles and abstracts to select candidate papers for further review. The initial search yield was 239 papers. On reviewing the title and abstract, 186 were rejected and 51 papers remained for analysis. New technology, such as CPOE, offers improvements over traditional paper tools and it is shown to have a positive effect on patient safety. New technology also creates the opportunity for new errors to occur and lead to the coining of the term "technology-induced error". The magnitude of the usability-testing needs is larger than it may seem.

Moorman, P. W., et al. (2009). "An inventory of publications on electronic medical records revisited." *Methods Inf Med* **48**(5): 454-458.

OBJECTIVES: In this short review we provide an update of our earlier inventories of publications indexed in MedLine with the MeSH term 'Medical Records Systems, Computerized'. **METHODS:** We retrieved and analyzed all references to English articles published before January 1, 2008, and indexed in PubMed with the MeSH term 'Medical Records Systems, Computerized'. **RESULTS:** We retrieved a total of 11,924 publications, of which 3937 (33%) appeared in a journal with an impact factor. Since 2002 the number of yearly publications, and the number of journals in which those publications appeared, increased. A cluster analysis revealed three clusters: an organizational issues cluster, a

technically oriented cluster and a cluster about order-entry and research. CONCLUSIONS: Although our previous inventory in 2003 suggested a constant yearly production of publications on electronic medical records since 1998, the current inventory shows another rise in production since 2002. In addition, many new journals and countries have shown interest during the last five years. In the last 15 years, interest in organizational issues remained fairly constant, order entry and research with systems gained attention, while interest in technical issues relatively decreased.

NAO (2010). The National Programme for IT in the NHS: an update on the delivery of detailed care records systems. Londres NAO: 46 , 19 fig.

<http://www.nao.org.uk/publications/1012/npfit.aspx>

Ce rapport présente le troisième bilan du programme national pour les technologies de l'information (National programme for information technology, NPFIT) en cours de mise en oeuvre en Angleterre depuis 2002 par le National health service (NHS) et critique sévèrement les « Electronic care records » (sorte de DMP) qui sont le pivot du NHS IT project. 2,3 milliards d'euros ont été dépensés sans générer les économies attendues, et le National Accounting Office (NAO) ne croit pas que les 4,6 milliards d'euros restants à investir amélioreront la situation. Parmi les critiques sont cités les retards sur le calendrier, le peu de bénéfice pour le patient, les difficultés de fonctionnement, et le nombre important de professionnels de santé et d'"hospital trusts" qui renonceraient à rejoindre le dispositif. Le projet va être révisé par le gouvernement britannique.

National Committee for Quality Assuranc. (2008). Standards and Guidelines for Physician Practice Connections? Patient-Centered Medical Home (PPC-PCMH). Washington DC National Committee for Quality Assurance: 68 +annexes, tabl.

<http://www.ncqa.org/tabid/631/Default.aspx>

NCQA's Physician Practice Connections- Patient-Centered Medical Home (PPC-PCMH) program assesses whether physician practices are functioning as medical homes. Building on the joint principles developed by the primary care specialty societies, the PPC-PCMH standards emphasize the use of systematic, patient-centered, coordinated care management processes. The Patient Centered Medical Home is a health care setting that facilitates partnerships between individual patients, and their personal physicians, and when appropriate, the patient's family. Care is facilitated by registries, information technology, health information exchange and other means to assure that patients get the indicated care when and where they need and want it in a culturally and linguistically appropriate manner. There are nine PPC standards, including 10 must pass elements, which can result in one of three levels of recognition.

Nguyen, L., et al. (2014). "Electronic health records implementation: an evaluation of information system impact and contingency factors." *Int J Med Inform* **83**(11): 779-796.

OBJECTIVE: This paper provides a review of EHR (electronic health record) implementations around the world and reports on findings including benefits and issues associated with EHR implementation. MATERIALS AND METHODS: A systematic literature review was conducted from peer-reviewed scholarly journal publications from the last 10 years (2001-2011). The search was conducted using various publication collections including: Scopus, Embase, Informit, Medline, Proquest Health and Medical Complete. This paper reports on our analysis of previous empirical studies of EHR implementations. We analysed data based on an extension of DeLone and McLean's information system (IS) evaluation framework. The extended framework integrates DeLone and McLean's dimensions, including information quality, system quality, service quality, intention of use and usage, user satisfaction and net benefits, together with contingent dimensions, including systems development, implementation attributes and organisational aspects, as identified by Van der Meijden and colleagues. RESULTS: A mix of evidence-based positive and negative impacts of EHR was found across different evaluation dimensions. In addition, a number of contingent factors were found to contribute to successful implementation of EHR. LIMITATIONS: This review does not include white papers or industry surveys, non-English papers, or those published outside the review time period. CONCLUSION: This review confirms the potential of this technology to aid patient care and clinical documentation; for example, in improved documentation quality, increased administration efficiency,

as well as better quality, safety and coordination of care. Common negative impacts include changes to workflow and work disruption. Mixed observations were found on EHR quality, adoption and satisfaction. The review warns future implementers of EHR to carefully undertake the technology implementation exercise. The review also informs healthcare providers of contingent factors that potentially affect EHR development and implementation in an organisational setting. Our findings suggest a lack of socio-technical connectives between the clinician, the patient and the technology in developing and implementing EHR and future developments in patient-accessible EHR. In addition, a synthesis of DeLone and McLean's framework and Van der Meijden and colleagues' contingent factors has been found useful in comprehensively understanding and evaluating EHR implementations.

Niazkhani, Z., et al. (2017). "The impact of health information technology on organ transplant care: A systematic review." *Int J Med Inform* **100**: 95-107.

BACKGROUND: Health Information Technology (HIT) has a potential to promote transplant care. However, a systematic appraisal on how HIT application has so far affected transplant care is greatly missing from the literature. We systematically reviewed trials that evaluated HIT impact on process and patient outcomes as well as costs in organ transplant care. **METHODS:** A systematic search was conducted in OVID versions of MEDLINE, EMBASE, Cumulative Index to Nursing and Allied Health Literature (CINAHL), the Cochrane, and IEEE databases from January 1990 to December 2015. Studies were included if they: (i) evaluated HIT interventions; (ii) reported results for organ transplant population; (iii) reported quantitative data on process, patient, and cost outcomes; and (iv) used a randomized controlled trial or quasi-experimental study design. **RESULTS:** Primarily, 12,440 publications were identified; from which ten met inclusion criteria. Among HIT systems, uses of clinical decision support systems (CDSS) targeting different aspects of the complex organ transplant care were common. In terms of process outcomes, HIT positively impacted the timeliness of care, laboratory and medication management practices such as promoting therapeutic or diagnostic protocol compliance by clinicians, and reducing medication errors. Regarding patient outcomes, HIT demonstrated a beneficial impact on the percentage of post-transplant patients with normal lab values and decreasing immunosuppressive toxicity and also deviation from the predefined immunosuppressive therapeutic window. However, in terms of mortality, readmission, rejection, and antiviral resistance rates, the impact was not clearly established in the literature. Finally, these systems were associated with savings in the costs of transplant care in three studies. **CONCLUSION:** This is the first study reviewing HIT impact on transplant care outcomes. CDSSs have mainly been reported to support transplant care in realizing the above-mentioned benefits. However, to make conclusions, more evidence with less risk of bias is warranted. Several gaps in the literature, including comparison of the impact of commercial systems in different transplant settings, was identified which can motivate future research.

Norman, I. D., et al. (2011). "Ethics and electronic health information technology: challenges for evidence-based medicine and the physician-patient relationship." *Ghana Med J* **45**(3): 115-124.

OBJECTIVES: The National Health Insurance Scheme (NHIS), and the National Identification Authority (NIA), pose ethical challenges to the physician-patient relationship due to interoperability. This paper explores (1) the national legislation on Electronic Health Information Technology (EHIT), (2) the ethics of information technology and public health and (3) the effect on the Physician-patient relationship. **METHOD:** This study consisted of systematic literature and internet review of the legislation, information technology, the national health insurance program, and the physician-patient relationship. **RESULT:** The result shows that (1) EHIT have eroded a big part of the confidentiality between the physician and patient; (2) The encroachment on privacy is an inevitable outcome of EHIT; (3) Legislation on privacy, the collection, storage and uses of electronic health information is needed and; (4) the nexus between EHIT, NHIS, NHA, Ethics, the physician-patient relationship and privacy. **CONCLUSION:** The study highlights the lack of protection for physician-patient relationship as medical practice transitions from the conventional to the modern, information technology driven domain.

Nutley, T. et Reynolds, H. W. (2013). "Improving the use of health data for health system strengthening." *Glob Health Action* **6**: 20001.

BACKGROUND: Good quality and timely data from health information systems are the foundation of all health systems. However, too often data sit in reports, on shelves or in databases and are not sufficiently utilised in policy and program development, improvement, strategic planning and advocacy. Without specific interventions aimed at improving the use of data produced by information systems, health systems will never fully be able to meet the needs of the populations they serve.

OBJECTIVE: To employ a logic model to describe a pathway of how specific activities and interventions can strengthen the use of health data in decision making to ultimately strengthen the health system.

DESIGN: A logic model was developed to provide a practical strategy for developing, monitoring and evaluating interventions to strengthen the use of data in decision making. The model draws on the collective strengths and similarities of previous work and adds to those previous works by making specific recommendations about interventions and activities that are most proximate to affect the use of data in decision making. The model provides an organizing framework for how interventions and activities work to strengthen the systematic demand, synthesis, review, and use of data.

RESULTS: The logic model and guidance are presented to facilitate its widespread use and to enable improved data-informed decision making in program review and planning, advocacy, policy development. Real world examples from the literature support the feasible application of the activities outlined in the model.

CONCLUSIONS: The logic model provides specific and comprehensive guidance to improve data demand and use. It can be used to design, monitor and evaluate interventions, and to improve demand for, and use of, data in decision making. As more interventions are implemented to improve use of health data, those efforts need to be evaluated.

OCDE (2010). Achieving Efficiency Improvements in the Health sector through ICTs - Final report. Paris OCDE: 117, tabl., fig.

http://ec.europa.eu/health/eu_world/docs/oecd_ict_en.pdf

This report presents an analysis of OECD countries efforts to implement information and communication technologies (ICTs) in health care systems. It provides advice on the range of policy options, conditions and practices that policy makers can adapt to their own national circumstances to accelerate adoption and effective use of these technologies. The analysis draws upon a considerable body of recent literature and in, particular, lessons learned from case studies in six OECD countries (Australia, Canada, the Netherlands, Spain, Sweden, and the United States), all of which reported varying degrees of success deploying health ICT solutions.

OCDE (2013). Strengthening Health Information Infrastructure: Matters for Quality Health Care: Good Practices, New Opportunities and Data Privacy Protection Challenges. Paris OCDE: 188, tabl., graph., fig.

<https://www.oecd.org/publications/strengthening-health-information-infrastructure-for-health-care-quality-governance-9789264193505-en.htm>

Privacy-respectful uses of data for health, health care quality and health system performance monitoring and research must become widespread, regular activities. This report examines the progress OECD countries have made in developing and linking health and health care data for statistics and research, including the use of data from electronic health record systems. It signals differences among countries, as well as the opportunities that exist in all countries to continue to strengthen their infrastructure.

OCDE (2013). Toward New Models for Innovative Governance of Biomedecine and Health Technologies. OECD Science, Technology and Industry Policy Papers ; 11. Paris OCDE: 42, fig.

http://www.oecd-ilibrary.org/science-and-technology/toward-new-models-for-innovative-governance-of-biomedecine-and-health-technologies_5k3v0h1jnnlr-en

This report examines examples of new and emerging governance models that aim to support the responsible development of diagnostics and treatments based on the latest advances in biomedicine. In particular, it presents programmes and initiatives that aim to manage uncertainty in the development and approval of new medical products and thereby to improve the understanding of the risk/benefit balance. It also identifies some of the main challenges for policy makers, regulators and other communities involved in the translation of biomedical innovation and health technologies from the laboratory bench to point of care.

O'Connor, S., et al. (2016). "Understanding factors affecting patient and public engagement and recruitment to digital health interventions: a systematic review of qualitative studies." *BMC Med Inform Decis Mak* **16**(1): 120.

BACKGROUND: Numerous types of digital health interventions (DHIs) are available to patients and the public but many factors affect their ability to engage and enrol in them. This systematic review aims to identify and synthesise the qualitative literature on barriers and facilitators to engagement and recruitment to DHIs to inform future implementation efforts. **METHODS:** PubMed, MEDLINE, CINAHL, Embase, Scopus and the ACM Digital Library were searched for English language qualitative studies from 2000 - 2015 that discussed factors affecting engagement and enrolment in a range of DHIs (e.g. 'telemedicine', 'mobile applications', 'personal health record', 'social networking'). Text mining and additional search strategies were used to identify 1,448 records. Two reviewers independently carried out paper screening, quality assessment, data extraction and analysis. Data was analysed using framework synthesis, informed by Normalization Process Theory, and Burden of Treatment Theory helped conceptualise the interpretation of results. **RESULTS:** Nineteen publications were included in the review. Four overarching themes that affect patient and public engagement and enrolment in DHIs emerged; 1) personal agency and motivation; 2) personal life and values; 3) the engagement and recruitment approach; and 4) the quality of the DHI. The review also summarises engagement and recruitment strategies used. A preliminary Digital Health EnGagement MOdel (DIEGO) was developed to highlight the key processes involved. Existing knowledge gaps are identified and a number of recommendations made for future research. Study limitations include English language publications and exclusion of grey literature. **CONCLUSION:** This review summarises and highlights the complexity of digital health engagement and recruitment processes and outlines issues that need to be addressed before patients and the public commit to digital health and it can be implemented effectively. More work is needed to create successful engagement strategies and better quality digital solutions that are personalised where possible and to gain clinical accreditation and endorsement when appropriate. More investment is also needed to improve computer literacy and ensure technologies are accessible and affordable for those who wish to sign up to them. **SYSTEMATIC REVIEW REGISTRATION:** International Prospective Register of Systematic Reviews CRD42015029846.

Oderkirk, J. (2017). Readiness of electronic health record systems to contribute to national health information and research. *OECD Health Working Paper; 99*. Paris OCDE: 80 ,fig., tabl.

http://www.oecd-ilibrary.org/fr/social-issues-migration-health/readiness-of-electronic-health-record-systems-to-contribute-to-national-health-information-and-research_9e296bf3-en

All countries are investing in the development of electronic health (clinical) records, but only some countries are moving forward the possibility of data extraction for research, statistics and other uses that serve the public interest. This study reports on the development and use of data from electronic health records in twenty-eight countries. It reports on the prevalence of technical and operational factors that support countries in the development of health information and research programmes from data held within electronic health record systems, such as data coverage, interoperability and standardisation. It examines data quality challenges and how some countries are addressing them and it explores the governance of electronic health record systems and data, including examples of national statistical and research uses of data. The report provides an overall assessment of the readiness of countries to further develop health information from data within electronic health record systems and describes the outlook for the future. Ten countries are identified as having high readiness that enables them to develop world-class health information systems supporting health system quality, efficiency and performance and creates a firm foundation for scientific research and discovery.

Ozkaynak, M., et al. (2017). "Use of Electronic Health Records by Nurses for Symptom Management in Inpatient Settings: A Systematic Review." *Comput Inform Nurs* **35**(9): 465-472.

Symptom management is one of the essential functions of nurses in inpatient settings; yet, little is understood about the manner in which nurses use electronic health records for symptom documentation. Therefore, the purpose of this systematic review is to characterize nurses' use of electronic health records for documentation of symptom assessment and management in inpatient settings, to inform design studies that better support electronic health records for patient symptom

management by nurses. We searched the Ovid Medline (1946-current), Cumulative Index to Nursing and Allied Health Literature (EBSCO, 1981-current), and Excerpta Medica Database (Embase.com, 1974-current) databases from inception through May 2015 using multiple subject headings and "free text" key words, representing the concepts of electronic medical records, symptom documentation, and inpatient setting. One thousand nine hundred eighty-two articles were returned from the search. Eighteen publications from the years 2003 to 2014 were included after abstract and full text review. Studies heavily focused on a pain as symptom. Nurses face challenges when using electronic health records that can threaten quality and safety of care. Clinical, design, and administrative recommendations were identified to overcome the challenges of nurses' electronic health record use. A call for interdisciplinary, comprehensive, systematic interventions and user-centered design of information systems is needed.

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Pearce, C., et al. (2006). "Analysing the doctor-patient-computer relationship : the use of video data." *Informatics in Primary Care* **14**(4): 221-226.

Phillips, K., et al. (2010). "Electronic medical records in long-term care." *J Hosp Mark Public Relations* **20**(2): 131-142.

Long-term care (LTC) facilities possess unique characteristics in terms of implementation and utilization of electronic medical records (EMRs). The focus of LTC is on a population requiring care encompassing all aspects associated with quality of life rather than simply acute treatment. Because this focus is of a larger scale than traditional medical facilities, the priorities in the implementation and utilization of EMRs are higher in accessing patient history information. The purpose of this study was to determine the EMR utilization in the chronic care settings. In conclusion, the literature review performed does not support the fact that EMRs are currently being effectively and widely used in the LTC facilities.

Pliskie, J. et Wallenfang, L. (2014). "How geographical information systems analysis influences the continuum of patient care." *J Med Pract Manage* **29**(5): 282-285.

As the vast repository of data about millions of patients grows, the analysis of this information is changing the provider-patient relationship and influencing the continuum of care for broad swaths of the population. At the same time, while population health management moves from a volume-based model to a value-based one and additional patients seek care due to healthcare reform, hospitals and healthcare networks are evaluating their business models and searching for new revenue streams. Utilizing geographical information systems to model and analyze large amounts of data is helping organizations better understand the characteristics of their patient population, demographic and socioeconomic trends, and shifts in the utilization of healthcare. In turn, organizations can more

effectively conduct service line planning, strategic business plans, market growth strategies, and human resource planning. Healthcare organizations that use GIS modeling can set themselves apart by making more informed and objective business strategy decisions.

Plu, I., et al. (2009). "[Principles and stakes of external communication of healthcare networks: the case of healthcare networks for health services accessibility]." *Sante Publique* **21**(2): 173-181.

Healthcare networks which purpose is to manage patients through better coordination of the care, need to develop a communication strategy to be recognized by the public and by healthcare professionals and to be inserted in the healthcare landscape. We firstly will present legal requirements related to external communication of healthcare networks. Then, we will describe the different tools which can be used to communicate about healthcare networks in its area, with the example from a healthcare network for health services accessibility. In the French Public health code, the legal status and the ethical charter of the healthcare network have to be delivered to the healthcare professionals in its area and to the patients. Moreover, the example healthcare network informed collectively and individually the healthcare professionals of its area about its activities. It made it known to the public by the way of departmental prevention manifestations and health education sessions in community social associations. From these examples, we will conduct an ethical reflection on the modalities and stakes of the external communication of healthcare networks.

Porter, M., et al. (2009). The Finnish Health Care System : A Value-Based Perspective. *Sitra report*; **82**. Helsinki Sitra: 115 , tabl.

<https://www.hbs.edu/faculty/Pages/item.aspx?num=47110>

This report applies a value-based framework of health care delivery in order to provide a holistic view of the current state of Finnish health care. This report consists of three parts. Section 2 presents a brief overview of the general principles of value-based care delivery. Sections 3 to 7 then utilize these principles to analyze the Finnish health care system as it looks today. While the text aims to cover the essential features of the Finnish system, special attention is paid to aspects that are crucial from a value-based perspective. Finally, Section 8 proposes a set of general conclusions and recommendations for Finland.

Powell, K. R. (2017). "Patient-Perceived Facilitators of and Barriers to Electronic Portal Use: A Systematic Review." *Comput Inform Nurs* **35**(11): 565-573.

This systematic review describes characteristics of portal users and their perceptions of this emerging technology. Recent empirical evidence (2010-2016) was reviewed to answer three questions: (1) What are the characteristics of electronic patient portal users? (2) What are patient-perceived facilitators of electronic patient portal use? (3) What are patient-perceived barriers to electronic patient portal use? Characteristics of portal users are described according to three broad categories: demographic characteristics, patterns of use, and complexity and duration of disease. Three themes were found related to patient-perceived facilitators of use: provider encouragement, access/control over health information, and enhanced communication; two themes were found related to patient-perceived barriers to use: lack of awareness/training and privacy and security concerns. Understanding a patient's perception of technology is paramount in optimizing use. These insights will allow for development of better products and clinical processes that facilitate broad goals of improved use of information technology. Policy and practice implications are discussed, as well as suggestions for future research.

Randhawa, G. K. (2017). "A Conceptual Model for Increasing Use of Electronic Medical Records by Primary Care Physicians Through End-User Support." *Stud Health Technol Inform* **234**: 286-291.

A conceptual model for exploring the relationship between end-user support (EUS) and electronic medical record (EMR) use by primary care physicians is presented. The model was developed following a review of conceptual and theoretical frameworks related to technology adoption/use and EUS. The model includes (a) one core construct (facilitating conditions), (b) four antecedents and one postcedent of facilitating conditions, and (c) four moderators. EMR use behaviour is the key outcome

of the model. The proposed conceptual model should be tested. The model may be used to inform planning and decision-making for EMR implementations to increase EMR use for benefits realization.

Reis, Z. S. N., et al. (2017). "Is There Evidence of Cost Benefits of Electronic Medical Records, Standards, or Interoperability in Hospital Information Systems? Overview of Systematic Reviews." *JMIR Med Inform* 5(3): e26.

BACKGROUND: Electronic health (eHealth) interventions may improve the quality of care by providing timely, accessible information about one patient or an entire population. Electronic patient care information forms the nucleus of computerized health information systems. However, interoperability among systems depends on the adoption of information standards. Additionally, investing in technology systems requires cost-effectiveness studies to ensure the sustainability of processes for stakeholders. **OBJECTIVE:** The objective of this study was to assess cost-effectiveness of the use of electronically available inpatient data systems, health information exchange, or standards to support interoperability among systems. **METHODS:** An overview of systematic reviews was conducted, assessing the MEDLINE, Cochrane Library, LILACS, and IEEE Library databases to identify relevant studies published through February 2016. The search was supplemented by citations from the selected papers. The primary outcome sought the cost-effectiveness, and the secondary outcome was the impact on quality of care. Independent reviewers selected studies, and disagreement was resolved by consensus. The quality of the included studies was evaluated using a measurement tool to assess systematic reviews (AMSTAR). **RESULTS:** The primary search identified 286 papers, and two papers were manually included. A total of 211 were systematic reviews. From the 20 studies that were selected after screening the title and abstract, 14 were deemed ineligible, and six met the inclusion criteria. The interventions did not show a measurable effect on cost-effectiveness. Despite the limited number of studies, the heterogeneity of electronic systems reported, and the types of intervention in hospital routines, it was possible to identify some preliminary benefits in quality of care. Hospital information systems, along with information sharing, had the potential to improve clinical practice by reducing staff errors or incidents, improving automated harm detection, monitoring infections more effectively, and enhancing the continuity of care during physician handoffs. **CONCLUSIONS:** This review identified some benefits in the quality of care but did not provide evidence that the implementation of eHealth interventions had a measurable impact on cost-effectiveness in hospital settings. However, further evidence is needed to infer the impact of standards adoption or interoperability in cost benefits of health care; this in turn requires further research.

Rudin, R. S., et al. (2014). "Usage and effect of health information exchange: a systematic review." *Ann Intern Med* 161(11): 803-811.

BACKGROUND: Health information exchange (HIE) is increasing in the United States, and it is incentivized by government policies. **PURPOSE:** To systematically review and evaluate evidence of the use and effect of HIE on clinical care. **DATA SOURCES:** Selected databases from 1 January 2003 to 31 May 2014. **STUDY SELECTION:** English-language hypothesis-testing or quantitative studies of several types of data exchange among unaffiliated organizations for use in clinical care that addressed health outcomes, efficiency, utilization, costs, satisfaction, HIE usage, sustainability, and attitudes or barriers. **DATA EXTRACTION:** Data extraction was done in duplicate. **DATA SYNTHESIS:** Low-quality evidence from 12 hypothesis-testing studies supports an effect of HIE use on reduced use or costs in the emergency department. Direct evidence that HIEs were used by providers was reported in 21 studies involving 13 distinct HIE organizations, 6 of which were located in New York, and generally showed usage in less than 10% of patient encounters. Findings from 17 studies of sustainability suggest that approximately one quarter of existing HIE organizations consider themselves financially stable. Findings from 38 studies about attitudes and barriers showed that providers, patients, and other stakeholders consider HIE to be valuable, but barriers include technical and workflow issues, costs, and privacy concerns. **LIMITATION:** Publication bias, possible selective reporting of outcomes, and a dearth of reporting on context and implementation processes. **CONCLUSION:** Health information exchange use probably reduces emergency department usage and costs in some cases. Effects on other outcomes are unknown. All stakeholders claim to value HIE, but many barriers to acceptance and sustainability exist. A small portion of operational HIEs have been evaluated, and more research is needed to identify and understand success factors. **PRIMARY FUNDING SOURCE:** U.S. Department of Veterans Affairs. (PROSPERO registration number: CRD42014007469).

Ryan, D., et al. (2017). "Use of electronic medical records and biomarkers to manage risk and resource efficiencies." *Eur Clin Respir J* **4**(1): 1293386.

The migration from paper to electronic medical records (EMRs) was motivated by the administrative need to record, retrieve and process increasing amounts of clinical data in the 1980s. In the intervening period, there has been growing recognition of the potential of such records for achieving care efficiencies, informing clinical decision making and real-life research. EMRs can be used to characterise patient groups, management approaches and differential outcomes. Characterisation can also help with identification of potential biomarkers for future risk determination and likely treatment response. The future heralds even greater opportunities through integration of clinical records and a range of technology-based solutions within a more complete electronic health record (EHR). Through application of algorithms based on identified risk predictors and disease determinants, clinical records could also be used to enable risk stratification of patients to optimise targeted interventions, conserving resources to achieve individual patient and system-wide benefit. In this review, we reflect on the evolution of the EMR and EHR and discuss current and emerging opportunities, particularly with respect to biomarkers and targeting of innovative biologic interventions. We also consider some of the critical issues associated with realising the potential of the EHR as a clinical aid and research tool in an age of emerging technologies..

Sbaffi, L. et Rowley, J. (2017). "Trust and Credibility in Web-Based Health Information: A Review and Agenda for Future Research." *J Med Internet Res* **19**(6): e218.

BACKGROUND: Internet sources are becoming increasingly important in seeking health information, such that they may have a significant effect on health care decisions and outcomes. Hence, given the wide range of different sources of Web-based health information (WHI) from different organizations and individuals, it is important to understand how information seekers evaluate and select the sources that they use, and more specifically, how they assess their credibility and trustworthiness. **OBJECTIVE:** The aim of this study was to review empirical studies on trust and credibility in the use of WHI. The article seeks to present a profile of the research conducted on trust and credibility in WHI seeking, to identify the factors that impact judgments of trustworthiness and credibility, and to explore the role of demographic factors affecting trust formation. On this basis, it aimed to identify the gaps in current knowledge and to propose an agenda for future research. **METHODS:** A systematic literature review was conducted. Searches were conducted using a variety of combinations of the terms WHI, trust, credibility, and their variants in four multi-disciplinary and four health-oriented databases. Articles selected were published in English from 2000 onwards; this process generated 3827 unique records. After the application of the exclusion criteria, 73 were analyzed fully. **RESULTS:** Interest in this topic has persisted over the last 15 years, with articles being published in medicine, social science, and computer science and originating mostly from the United States and the United Kingdom. Documents in the final dataset fell into 3 categories: (1) those using trust or credibility as a dependent variable, (2) those using trust or credibility as an independent variable, and (3) studies of the demographic factors that influence the role of trust or credibility in WHI seeking. There is a consensus that website design, clear layout, interactive features, and the authority of the owner have a positive effect on trust or credibility, whereas advertising has a negative effect. With regard to content features, authority of the author, ease of use, and content have a positive effect on trust or credibility formation. Demographic factors influencing trust formation are age, gender, and perceived health status. **CONCLUSIONS:** There is considerable scope for further research. This includes increased clarity of the interaction between the variables associated with health information seeking, increased consistency on the measurement of trust and credibility, a greater focus on specific WHI sources, and enhanced understanding of the impact of demographic variables on trust and credibility judgments.

Salzano, G. et Bourret, C. (2003). "Healthcare networks services for patients and large public: methodological and engineering issues." *Stud Health Technol Inform* **95**: 492-497.

In this paper, we analyse the services supplied by innovative and transversal healthcare organisations to satisfy patients and large public requirements and we illustrate them with the French healthcare networks. We classify these services in two groups, healthcare delivery services and health related

information services, and we define three layers for their possible contexts. We will use an Information System perspective to investigate about various methodological approaches to realise each group of services and we compare their challenges and difficulties. Finally, we identify methodological and engineering issues common to both groups.

Secginli, S., et al. (2014). "Attitudes of health professionals towards electronic health records in primary health care settings: a questionnaire survey." *Inform Health Soc Care* **39**(1): 15-32.

PURPOSE: This study aimed to assess the attitudes of health professionals towards electronic health records (EHRs) in primary health care settings in Turkey. **METHODS:** A survey was administered to 754 health professionals working in Family Health Centres (FHCs) in seven districts in Istanbul, Turkey. The survey was developed based on extensive literature review, and consisted of 33 statements rated on a five-point Likert-scale. **RESULTS:** A total of 325 completed questionnaires were received, representing a 43% response rate, with 97% of respondents being satisfied with the EHR system in the FHCs. There were significant differences between health professional groups (physicians and nurses/midwives) in their perceptions of EHRs decreasing paper-based records, data security in EHRs, and costs of EHRs ($p < 0.05$). Narrative responses indicated ongoing needs in software development, further support of nursing documentation and training. **CONCLUSIONS:** Overall positive attitudes towards EHRs among primary care health professionals in Turkey suggest strong acceptance and use. Recommendations based on the findings include EHR technology refinements, improved clinical documentation using standardized terminologies, and health professional-informed EHR training.

Sitapati, A., et al. (2017). "Integrated precision medicine: the role of electronic health records in delivering personalized treatment." *Wiley Interdiscip Rev Syst Biol Med* **9**(3).

Precision Medicine involves the delivery of a targeted, personalized treatment for a given patient. By harnessing the power of electronic health records (EHRs), we are increasingly able to practice precision medicine to improve patient outcomes. In this article, we introduce the scientific community at large to important building blocks for personalized treatment, such as terminology standards that are the foundation of the EHR and allow for exchange of health information across systems. We briefly review different types of clinical decision support (CDS) and present the current state of CDS, which is already improving the care patients receive with genetic profile-based tailored recommendations regarding diagnostic and treatment plans. We also report on limitations of current systems, which are slowly beginning to integrate new genomic data into patient records but still present many challenges. Finally, we discuss future directions and how the EHR can evolve to increase the capacity of the healthcare system in delivering Precision Medicine at the point of care. *WIREs Syst Biol Med* 2017, 9:e1378. doi: 10.1002/wsbm.1378 For further resources related to this article, please visit the WIREs website.

Souri, S., et al. (2017). "Identification of validated case definitions for chronic disease using electronic medical records: a systematic review protocol." *Syst Rev* **6**(1): 38.

BACKGROUND: Primary care electronic medical record (EMR) data are being used for research, surveillance, and clinical monitoring. To broaden the reach and usability of EMR data, case definitions must be specified to identify and characterize important chronic conditions. The purpose of this study is to identify all case definitions for a set of chronic conditions that have been tested and validated in primary care EMR and EMR-linked data. This work will provide a reference list of case definitions, together with their performance metrics, and will identify gaps where new case definitions are needed. **METHODS:** We will consider a set of 40 chronic conditions, previously identified as potentially important for surveillance in a review of multimorbidity measures. We will perform a systematic search of the published literature to identify studies that describe case definitions for clinical conditions in EMR data and report the performance of these definitions. We will stratify our search by studies that use EMR data alone and those that use EMR-linked data. We will compare the performance of different definitions for the same conditions and explore the influence of data source, jurisdiction, and patient population. **DISCUSSION:** EMR data from primary care providers can be compiled and used for benefit by the healthcare system. Not only does this work have the potential to further develop disease surveillance and health knowledge, EMR surveillance systems can provide

rapid feedback to participating physicians regarding their patients. Existing case definitions will serve as a starting point for the development and validation of new case definitions and will enable better surveillance, research, and practice feedback based on detailed clinical EMR data. SYSTEMATIC REVIEW REGISTRATION: PROSPERO CRD42016040020.

Smits, M., et al. (2017). "The Development and Performance of After-Hours Primary Care in the Netherlands: A Narrative Review." *Ann Intern Med* **166**(10): 737-742.

In many Western countries, hospital emergency departments are overcrowded, leading to the desire to strengthen primary care, particularly after hours. To achieve this goal, an increasing number of Western nations are reorganizing their after-hours primary care systems into large-scale primary care physician (PCP) cooperatives. This article provides an overview of the organization, performance, and development of PCP cooperatives in the Netherlands. The Dutch after-hours primary care system might offer opportunities for other countries facing problems with after-hours care and inappropriate emergency department visits. During the past several years, the number of contacts with Dutch PCP cooperatives has increased to 245 contacts per 1000 citizens per year. Many contacts (45%) are nonurgent, and about half occur as part of a series of primary care contacts. Low accessibility and availability of daytime primary care are related to greater use of after-hours primary care. To prevent unnecessary attendance at the cooperatives, physicians advocate copayment, a stricter triage system, and a larger role for telephone doctors. More than half of the PCP cooperatives in the Netherlands have integrated with hospital emergency departments, forming "emergency care access points." This collaboration has decreased emergency department use by 13% to 22%, and treatment of self-referrals by PCP cooperatives in emergency care access points is safe and cost-effective. Direct access to diagnostic facilities may optimize efficiency even more. Other recent developments include access to electronic health records of daytime primary care practices, task substitution from physicians to nurses, and the launch of a 2-year training program for PCPs to become experts in emergency care.

Stolee, P., et al. (2010). "The use of electronic health information systems in home care: facilitators and barriers." *Home Healthc Nurse* **28**(3): 167-179; quiz 180-161.

Electronic health information systems (EHIS) containing standardized assessment data (e.g., RAI-Home Care, Outcome and Assessment Information Set [OASIS]) hold considerable promise, but their potential has yet to be fully realized. Literature was searched for strategies on implementing and using EHIS, including barriers and facilitators of their use in home care. Results of this review will be discussed in terms of their implications for the future development and use of EHIS in home care, and for future research.

Thompson, G., et al. (2015). "Impact of the Electronic Medical Record on Mortality, Length of Stay, and Cost in the Hospital and ICU: A Systematic Review and Metaanalysis." *Crit Care Med* **43**(6): 1276-1282.

OBJECTIVE: To evaluate effects of health information technology in the inpatient and ICU on mortality, length of stay, and cost. Methodical evaluation of the impact of health information technology on outcomes is essential for institutions to make informed decisions regarding implementation. DATA SOURCES: EMBASE, Scopus, Medline, the Cochrane Review database, and Web of Science were searched from database inception through July 2013. Manual review of references of identified articles was also completed. STUDY SELECTION: Selection criteria included a health information technology intervention such as computerized physician order entry, clinical decision support systems, and surveillance systems, an inpatient setting, and endpoints of mortality, length of stay, or cost. Studies were screened by three reviewers. Of the 2,803 studies screened, 45 met selection criteria (1.6%). DATA EXTRACTION: Data were abstracted on the year, design, intervention type, system used, comparator, sample sizes, and effect on outcomes. Studies were abstracted independently by three reviewers. DATA SYNTHESIS: There was a significant effect of surveillance systems on in-hospital mortality (odds ratio, 0.85; 95% CI, 0.76-0.94; I=59%). All other quantitative analyses of health information technology interventions effect on mortality and length of stay were not statistically significant. Cost was unable to be quantitatively evaluated. Qualitative synthesis of studies of each outcome demonstrated significant study heterogeneity and small clinical effects. CONCLUSIONS: Electronic interventions were not shown to have a substantial effect on mortality, length of stay, or

cost. This may be due to the small number of studies that were able to be aggregatedly analyzed due to the heterogeneity of study populations, interventions, and endpoints. Better evidence is needed to identify the most meaningful ways to implement and use health information technology and before a statement of the effect of these systems on patient outcomes can be made.

Thrasher, E. H. et Revels, M. A. (2012). "The role of information technology as a complementary resource in healthcare integrated delivery systems." *Hosp Top* **90**(2): 23-32.

As in many industries, it is recognized that there is a need to increase the use of information technology (IT) in the healthcare industry. However, until now, this has not occurred. In fact, some say that IT in healthcare has consistently fallen far short of expectations. The purpose of this study was to illuminate the need for a more holistic view of healthcare network integration and demonstrate that simply applying the latest technology to the network is not adequate for improving overall effectiveness. The study results showed that the more holistic view has to include management commitment, of complementarity between IT integration and organizational integration, and continued investments.

Topaz, M. et Ash, N. (2013). "[Overview of the US policies for health information technology and lessons learned for Israel]." *Harefuah* **152**(5): 262-266, 310, 309.

The healthcare system in the United States (U.S.) faces a number of significant changes aimed at improving the quality and availability of medical services and reducing costs. Implementation of health information technologies, especially Electronic Health Records (EHR), is central to achieving these goals. Several recent Legislative efforts in the U.S. aim at defining standards and promoting wide scale "Meaningful Use" of the novel technologies. In Israel, the majority of healthcare providers adopted EHR throughout the last decade. Unlike the U.S., the process of EHR adoption occurred spontaneously, without governmental control or the definition of standards. In this article, we review the U.S. health information technology policies and standards and suggest potential lessons learned for Israel. First, we present the three-staged Meaningful Use regulations that require eligible healthcare practitioners to use EHR in their practice. We also describe the standards for EHR certification and national efforts to create interoperable health information technology networks. Finally, we provide a brief overview of the Israeli regulation in the field of EHR. Although the adoption of health information technology is wider in Israel, the lack of technology standards and governmental control has led to large technology gaps between providers. The example of the U.S. legislation urges the adoption of several critical steps to further enhance the quality and efficiency of the Israeli healthcare system, in particular: strengthening health information technology regulation; developing licensure criteria for health information technology; bridging the digital gap between healthcare organizations; defining quality measures; and improving the accessibility of health information for patients.

van Velthoven, M. H., et al. (2016). "Feasibility of extracting data from electronic medical records for research: an international comparative study." *BMC Med Inform Decis Mak* **16**(1): 90.

BACKGROUND: Electronic medical records (EMR) offer a major potential for secondary use of data for research which can improve the safety, quality and efficiency of healthcare. They also enable the measurement of disease burden at the population level. However, the extent to which this is feasible in different countries is not well known. This study aimed to: 1) assess information governance procedures for extracting data from EMR in 16 countries; and 2) explore the extent of EMR adoption and the quality and consistency of EMR data in 7 countries, using management of diabetes type 2 patients as an exemplar. **METHODS:** We included 16 countries from Australia, Asia, the Middle East, and Europe to the Americas. We undertook a multi-method approach including both an online literature review and structured interviews with 59 stakeholders, including 25 physicians, 23 academics, 7 EMR providers, and 4 information commissioners. Data were analysed and synthesised thematically considering the most relevant issues. **RESULTS:** We found that procedures for information governance, levels of adoption and data quality varied across the countries studied. The required time and ease of obtaining approval also varies widely. While some countries seem ready for secondary uses of data from EMR, in other countries several barriers were found, including limited experience

with using EMR data for research, lack of standard policies and procedures, bureaucracy, confidentiality, data security concerns, technical issues and costs. CONCLUSIONS: This is the first international comparative study to shed light on the feasibility of extracting EMR data across a number of countries. The study will inform future discussions and development of policies that aim to accelerate the adoption of EMR systems in high and middle income countries and seize the rich potential for secondary use of data arising from the use of EMR solutions.

Verhulst, S., et al. (2014). The open data era in health and social care. Londres NHS: 81 , tabl., fig.

<http://images.thegovlab.org/wordpress/wp-content/uploads/2014/06/nhs-full-report.pdf>

The central premise of this paper is that as the NHS moves to release data systematically, it needs to put in place a strategy for measuring the value of open data for the various stakeholders involved in the nation's healthcare system—and, indeed, for citizens in general. In today's budgetary climate, it is not enough to assess the value of expensive and complicated government programmes after the fact. We need to enhance our ability to marshal an arsenal of evidence in order to protect investments in innovative and potentially important new programmes. By becoming more agile in how we measure innovations in governance like open data, we can make government more efficient, and more effective. To aid in this goal, this draft whitepaper articulates recommendations for the NHS to follow as it seeks to measure the impact of open data empirically. By laying out a research agenda to accompany the NHS's open data strategy, our hope is to ensure that public investment in open data is supported by concrete evidence of its value, which, in turn, can be used to guide and evolve the ambitious plan to shift an entire nation's bureaucracy to more evidence-based decision-making. We are releasing this as a draft in order to encourage discussion and additional insights from interested readers. The paper is divided into four parts: Part I explains open data as a driver of innovation. We summarize the open data plans of the NHS, including the data the NHS holds, what it is planning to release and when, and the challenges to implementing a nationwide open data plan. Part II lays out the arguments in favor of using open data in a healthcare setting (six value propositions), such as improving patient choice and strengthening provider accountability, and outlines the empirical evidence we currently have in support of each. Part III presents a series of metrics that can help the NHS measure its performance and improve its use of open data. It establishes a conceptual framework to use for continuously evolving and accelerating the ability to measure the impact of open data in healthcare. Finally Part IV concludes with specific principles and recommendations to establish an Open Data Learning Environment (ODLE)--the practices and platforms by which to operationalize agile assessment and enable programme evolution

Walton, R. T., et al. (2003). "Computerised advice on drug dosage to improve prescribing practice." Cochrane Library (the)(6): 22.

Watson-Grant, S., et al. (2017). "Achieving sustainability in health information systems: a field tested measure of country ownership." Global Health **13**(1): 36.

BACKGROUND: A country will trust, value, and use, its health information system (HIS) to the extent it has had a role in its creation and maintenance. A sense of ownership contributes in turn to the long-term sustainability of the HIS, and thus the country's ability to monitor and evaluate population health and health services. To facilitate progress toward greater ownership, we developed and tested a tool to measure the country's ownership of its monitoring and evaluation (M&E) system. METHODS: Through a systematic review of the literature, we identified four dimensions of country ownership of an M&E system: partnership, commitment and responsibility, capacity, and accountability. We identified relevant indicators of the dimensions already in use in other tools used to assess M&E systems. We tested the data collection tool with 95 stakeholders of the Tanzanian HIS for HIV/AIDS control. RESULTS: We identified 56 items that addressed elements of the four dimensions. The respondents found our tool for assessing country ownership of an HIS to be clear and relevant, leading to the identification of important issues to be discussed. For example, all stakeholder groups affirmed that the Tanzanian Commission for AIDS is "playing a leadership role in addressing HIV through collaborative partnerships and work across borders to achieve greater impact." While many respondents disagreed with the statement, "There is an adequate number of government monitoring and evaluation posts at the sub-national level." CONCLUSIONS: Stakeholders found the M&E country ownership tool to address relevant questions clearly. It enabled them to identify successes and

challenges within four dimensions of country ownership. It thus holds the potential to lead to an agenda for strengthening country ownership. If implemented every few years, the tool can provide a means of monitoring progress through a set of standardized indicators. As country ownership of M&E increases, so will the long-term sustainability of the HIS.

Webster, P. C. (2011). "Go local, European review of electronic health records advises." *Cmaj* **183**(9): E535-536.

Weinfeld, J. M., et al. (2012). "Electronic health records improve the quality of care in underserved populations: a literature review." *J Health Care Poor Underserved* **23**(3 Suppl): 136-153.

Organizations in underserved settings are implementing or upgrading electronic health records (EHRs) in hopes of improving quality and meeting Federal goals for meaningful use of EHRs. However, much of the research that has been conducted on health information technology does not study use in underserved settings, or does not include EHRs. We conducted a structured literature search of MEDLINE to find articles supporting the contention that EHRs improve quality in underserved settings. We found 17 articles published between 2003 and 2011. These articles were mostly in urban settings, and most study types were descriptive in nature. The articles provide evidence that EHRs can improve documentation, process measures, guideline-adherence, and (to a lesser extent) outcome measures. Providers and managers believed that EHRs would improve the quality and efficiency of care. The limited quantity and quality of evidence point to a need for ongoing research in this area.

West, V. L., et al. (2015). "Innovative information visualization of electronic health record data: a systematic review." *J Am Med Inform Assoc* **22**(2): 330-339.

OBJECTIVE: This study investigates the use of visualization techniques reported between 1996 and 2013 and evaluates innovative approaches to information visualization of electronic health record (EHR) data for knowledge discovery. **METHODS:** An electronic literature search was conducted May-July 2013 using MEDLINE and Web of Knowledge, supplemented by citation searching, gray literature searching, and reference list reviews. General search terms were used to assure a comprehensive document search. **RESULTS:** Beginning with 891 articles, the number of articles was reduced by eliminating 191 duplicates. A matrix was developed for categorizing all abstracts and to assist with determining those to be excluded for review. Eighteen articles were included in the final analysis. **DISCUSSION:** Several visualization techniques have been extensively researched. The most mature system is LifeLines and its applications as LifeLines2, EventFlow, and LifeFlow. Initially, research focused on records from a single patient and visualization of the complex data related to one patient. Since 2010, the techniques under investigation are for use with large numbers of patient records and events. Most are linear and allow interaction through scaling and zooming to resize. Color, density, and filter techniques are commonly used for visualization. **CONCLUSIONS:** With the burgeoning increase in the amount of electronic healthcare data, the potential for knowledge discovery is significant if data are managed in innovative and effective ways. We identify challenges discovered by previous EHR visualization research, which will help researchers who seek to design and improve visualization techniques.

Wildenbos, G. A., et al. (2017). "Facilitators and Barriers of Electronic Health Record Patient Portal Adoption by Older Adults: A Literature Study." *Stud Health Technol Inform* **235**: 308-312.

Patient portal usage by older adults, patients aged 50 years old and above, is intended to improve their access and quality of care. Acceptance of patient portals by this target group is low. This paper discusses the results of a literature review to determine the facilitators and barriers that drive or inhibit older patients to adopt patient portals. Articles were included when they described an acceptance, adoption or usability evaluation study of a patient portal. From a total of 245 potentially relevant articles, 8 articles were finally included. We used the Unified Theory of Acceptance and Use of Technology (UTAUT) as a classification model to analyze factors influencing older adults' acceptance of patient portals. Main facilitators for acceptance were 'performance expectancy' and 'voluntariness of use' related to a higher level of education and experienced health. Main barriers were limited health literacy and motivation related to involuntariness to use a patient portal. Poor facilitation conditions (limited technology access and no prior knowledge on existence of a patient portal)

hampered access to a portal. More thorough insight into the latter is needed to improve the reach and effectiveness of patient portals among older patients.

Wollersheim, D., et al. (2009). "Archetype-based electronic health records: a literature review and evaluation of their applicability to health data interoperability and access." *Him j* **38**(2): 7-17.

Health Information Managers (HIMs) are responsible for overseeing health information. The change management necessary during the transition to electronic health records (EHR) is substantial, and ongoing. Archetype-based EHRs are a core health information system component which solve many of the problems that arise during this period of change. Archetypes are models of clinical content, and they have many beneficial properties. They are interoperable, both between settings and through time. They are more amenable to change than conventional paradigms, and their design is congruent with clinical practice. This paper is an overview of the current archetype literature relevant to Health Information Managers. The literature was sourced in the English language sections of ScienceDirect, IEEE Explore, Pubmed, Google Scholar, ACM Digital library and other databases on the usage of archetypes for electronic health record storage, looking at the current areas of archetype research, appropriate usage, and future research. We also used reference lists from the cited papers, papers referenced by the openEHR website, and the recommendations from experts in the area. Criteria for inclusion were (a) if studies covered archetype research and (b) were either studies of archetype use, archetype system design, or archetype effectiveness. The 47 papers included show a wide and increasing worldwide archetype usage, in a variety of medical domains. Most of the papers noted that archetypes are an appropriate solution for future-proof and interoperable medical data storage. We conclude that archetypes are a suitable solution for the complex problem of electronic health record storage and interoperability.

Wright, E., et al. (2015). "Sharing Physician Notes Through an Electronic Portal is Associated With Improved Medication Adherence: Quasi-Experimental Study." *J Med Internet Res* **17**(10): e226.

BACKGROUND: In surveys, interviews, and focus groups, patients taking medications and offered Web portal access to their primary care physicians' (PCPs) notes report improved adherence to their regimens. However, objective confirmation has yet to be reported. **OBJECTIVE:** To evaluate the association between patient Internet portal access to primary care physician visit notes and medication adherence. **METHODS:** This study is a retrospective comparative analysis at one site of the OpenNotes quasi-experimental trial. The setting includes primary care practices at the Geisinger Health System (GHS) in Danville, Pennsylvania. Participants include patients 18 years of age or older with electronic portal access, GHS primary care physicians, and Geisinger health plan insurance, and taking at least one antihypertensive or antihyperlipidemic agent from March 2009 to June 2011. Starting in March 2010, intervention patients were invited and reminded to read their PCPs' notes. Control patients also had Web portal access throughout, but their PCPs' notes were not available. From prescription claims, adherence was assessed by using the proportion of days covered (PDC). Patients with a PDC $\geq .80$ were considered adherent and were compared across groups using generalized linear models. **RESULTS:** A total of 2147 patients (756 intervention participants, 35.21%; 1391 controls, 64.79%) were included in the analysis. Compared to those without access, patients invited to review notes were more adherent to antihypertensive medications-adherence rate 79.7% for intervention versus 75.3% for control group; adjusted risk ratio, 1.06 (95% CI 1.00-1.12). Adherence was similar among patient groups taking antihyperlipidemic agents-adherence rate 77.6% for intervention versus 77.3% for control group; adjusted risk ratio, 1.01 (95% CI 0.95-1.07). **CONCLUSIONS:** Availability of notes following PCP visits was associated with improved adherence by patients prescribed antihypertensive, but not antihyperlipidemic, medications. As the use of fully transparent records spreads, patients invited to read their clinicians' notes may modify their behaviors in clinically valuable ways.

Zheng, K., et al. (2016). "A Survey of the Literature on Unintended Consequences Associated with Health Information Technology: 2014-2015." *Yearb Med Inform*(1): 13-29.

OBJECTIVE: To summarize recent research on unintended consequences associated with implementation and use of health information technology (health IT). Included in the review are original empirical investigations published in English between 2014 and 2015 that reported unintended effects introduced by adoption of digital interventions. Our analysis focuses on the trends of this stream of research, areas in which unintended consequences have continued to be reported, and common themes that emerge from the findings of these studies. **METHOD:** Most of the papers reviewed were retrieved by searching three literature databases: MEDLINE, Embase, and CINAHL. Two rounds of searches were performed: the first round used more restrictive search terms specific to unintended consequences; the second round lifted the restrictions to include more generic health IT evaluation studies. Each paper was independently screened by at least two authors; differences were resolved through consensus development. **RESULTS:** The literature search identified 1,538 papers that were potentially relevant; 34 were deemed meeting our inclusion criteria after screening. Studies described in these 34 papers took place in a wide variety of care areas from emergency departments to ophthalmology clinics. Some papers reflected several previously unreported unintended consequences, such as staff attrition and patients' withholding of information due to privacy and security concerns. A majority of these studies (71%) were quantitative investigations based on analysis of objectively recorded data. Several of them employed longitudinal or time series designs to distinguish between unintended consequences that had only transient impact, versus those that had persisting impact. Most of these unintended consequences resulted in adverse outcomes, even though instances of beneficial impact were also noted. While care areas covered were heterogeneous, over half of the studies were conducted at academic medical centers or teaching hospitals. **CONCLUSION:** Recent studies published in the past two years represent significant advancement of unintended consequences research by seeking to include more types of health IT applications and to quantify the impact using objectively recorded data and longitudinal or time series designs. However, more mixed-methods studies are needed to develop deeper insights into the observed unintended adverse outcomes, including their root causes and remedies. We also encourage future research to go beyond the paradigm of simply describing unintended consequences, and to develop and test solutions that can prevent or minimize their impact.

Ressources électroniques

EN FRANCE

> Ministère chargé de la santé

[Stratégie nationale e-santé](#)

Le ministère des Affaires sociales et de la Santé a publié, en juillet 2016, la Stratégie nationale e-santé 2020. L'objectif de cette stratégie est d'intégrer, de manière innovante, les nouvelles technologies pour améliorer le fonctionnement de notre système de santé. Il s'articule autour de quatre axes. Le premier axe vise à mettre le citoyen au cœur du système de santé, notamment en simplifiant l'accès aux soins et en développant des services favorisant l'autonomie des patients. Le deuxième axe consiste à soutenir l'innovation des professionnels de santé. Il s'agit de développer des cursus de formation autour du numérique, de soutenir les projets en faveur de l'innovation numérique, mais aussi de développer des outils d'aide à la décision médicale. Les mesures du troisième axe entendent simplifier le cadre d'actions pour les acteurs économiques, en clarifiant, notamment, les voies d'accès au marché des solutions e-santé. Enfin, le quatrième et dernier axe concerne la modernisation des outils de notre système de santé, avec l'amélioration des systèmes d'information, de la veille et de la surveillance sanitaire.

[Territoires de soins numériques](#)

Lancé dans le cadre des Investissements d'avenir et doté de 80 millions d'euros, le programme « Territoire de soins numérique » vise à moderniser le système de soins en expérimentant, dans certaines zones pilotes, les services et les technologies les plus innovants en matière d'e-santé. Sur les 18 projets portés par les Agences régionales de santé (ARS), 5 ont été sélectionnés pour leur caractère innovant et pérenne, leur adaptation aux

réalités territoriales, leur capacité à mobiliser une majorité d'acteurs et leur impact escompté sur le développement des filières industrielles de l'e-santé. Au terme du programme, les solutions qui auront démontré leur efficacité seront généralisées.

[Objets connectés et applications en santé : évolution de la relation professionnels-usagers, pour tous ? Sous quelles conditions ?, 27 novembre 2017](#)

La Conférence nationale de santé (CNS), le Conseil national consultatif des personnes handicapées (CNCPH) et le Conseil national des politiques de lutte contre la pauvreté et l'exclusion sociale (CNLE), ont organisé une matinée-débat sur la santé connectée. Programme de la matinée-débat et compte rendu synthétique. Les documents sont en ligne sur le site du ministère.

[Recourir au numérique pour mieux soigner – juin 2019](#)

Les principales mesures sont les suivantes :

- ▶ Ouvrir un espace numérique de santé à destination de chaque Français d'ici janvier 2022 ; ▶ Déployer pleinement la [télémédecine](#) ;
 - ▶ S'appuyer sur le numérique pour améliorer les organisations, dégager du temps médical et offrir un bouquet de services numériques aux professionnels de santé ;
 - ▶ Ouvrir l'hôpital (programme HOP'EN) et les territoires de santé (programme e-Parcours) sur le numérique ;
 - ▶ Favoriser la production et l'utilisation des données de santé ; ▶ Constituer une commission de l'éthique numérique en santé ;
 - ▶ Encourager l'innovation en e-santé.
- [D'autres dossiers sont disponibles à cette url.](#)

(Atlas des systèmes d'information hospitaliers, dossier médical partagé, cybersécurité...)

> Haute Autorité de santé

[Applis santé : règles de bonne pratique, novembre 2016](#)

[Télémédecine : guides et revues de littérature](#)

[Favoriser le déploiement de la télémédecine \(juin 2019\)](#)

- Voir aussi la rubrique : [E-santé](#)

> Institut Montaigne

[Réanimer le système de santé français : propositions 2017](#)

[Big data et objets connecté » : Faire de la France un champ de la révolution numérique](#)

> Inserm

[Big data en santé : dossier de l'Inserm, juillet 2016](#)

> HCAAM

« [La grande transformation numérique : pour quoi faire ?](#) » : Avis du Haut Conseil pour l'Avenir de l'Assurance maladie (Hcaam)

> [Site du CISS](#)

"Pour un patient acteur de la qualité de son parcours en santé : le numérique en santé" : Publication du CISS

> [Site de Galilée](#)

Cybersécurité : nos données de santé sont-elles bien protégées - Publication de la Lettre de Galilée

Voir aussi :

> [Anap](#)

> [Asip Portail e-santé](#)

> [Formatic santé](#)

Réseau d'échanges et de formation en ligne des professionnels de santé

> [Ipsos](#)

Sondage : Les Européens et la digitalisation du parcours de soins (20 juin 2019)

> [LESISS \(Les Entreprises des Systèmes d'Information Sanitaires et Sociaux\)](#)

> [TICSANTE](#)

A L'ETRANGER

> [OMS – Technologies de la santé](#)

(2015). [The Atlas of eHealth Country Profiles](#), Genève : OMS

(2011). [MHealth: New horizons for health through mobile technologies](#), Genève : OMS

(2016). [From innovation to implementation – eHealth in the WHO European Region](#)

> [Communauté européenne](#)

Comyn, G. (2009). "La e-santé : une solution pour les systèmes de santé européens." [Dossiers Européens \(Les\)\(17\)](#).

[Congrès du 7 juin 2016 – actes](#)

[Groupe de travail](#) sur la santé numérique

> [OCDE](#)

(2019) [Going digital : Shaping policies, improving lives.](#)

(2019) [Measuring the digital transformation.](#)

(2013). [ICTs and the Health Sector. Towards Smarter Health and Wellness Models.](#)

(2013). [Toward New Models for Innovative Governance of Biomedicine and Health Technologies](#)

