Social network of PESCA (Open Source Platform for eHealth).

Sanchez, Carlos L. Romero-Cuevas, Miguel. Lopez, Diego M. Lorca, Julio. Alcazar, Francisco J. Ruiz, Sergio. Mercado, Carmen. Garcia-Fortea, Pedro.

Studies in Health Technology & Informatics. 137:340-5, 2008.

Information and Communication Technologies (ICTs) are revolutionizing how healthcare systems deliver top-quality care to citizens. In this way, Open Source Software (OSS) has demonstrated to be an important strategy to spread ICTs use. Several human and technological barriers in adopting OSS for healthcare have been identified. Human barriers include user acceptance, limited support, technical skillfulness, awareness, resistance to change, etc., while Technological barriers embrace need for open standards, heterogeneous OSS developed without normalization and metrics, lack of initiatives to evaluate existing health OSS and need for quality control and functional validation. The goals of PESCA project are to create a platform of interoperable modules to evaluate, classify and validate good practices in health OSS. Furthermore, a normalization platform will provide interoperable solutions in the fields of healthcare services, health surveillance, health literature, and health education, knowledge and research. Within the platform, the first goal to achieve is the setup of the collaborative work infrastructure. The platform is being organized as a Social Network which works to evaluate five scopes of every existing open source tools for eHealth: Open Source Software, Quality, Pedagogical, Security and privacy and Internationalization/I18N. In the meantime, the knowledge collected from the networking will configure a Good Practice Repository on eHealth promoting the effective use of ICT on behalf of the citizen's health.

Security, safety, and related technology - the triangle of eHealth service provision.

Savastano, Mario. Hovsto, Asbjorn. Pharow, Peter. Blobel, Bernd.
Security, safety, and related technology - the triangle of eHealth service provision.

Studies in Health Technology & Informatics. 136:709-14, 2008.

The developing of innovative solutions in the emerging eHealth market requires strong economic efforts which may be justified only in presence of particularly suitable boundary conditions. Among the factors retained of primary importance for the development of eHealth, a correct approach to id-management is unanimously considered fundamental. Three keywords in the id-management context appear particularly important: standardization, security and safety. Standardization may contribute to increase the size and duration of the eHealth market, while security and safety may encourage all the stakeholders to trust in a appropriate and safe management of all the very sensitive personal data involved in the eHealth applications. The aim of the present paper is analyzing some security and safety issues in eHealth from the particular prospective of the identity management and standardization. The paper highlights the mission of the EU funded "BioHealth" project whose mission is to increase the stakeholders' knowledge about existing and emerging standards in eHealth with particular reference to identity management.

The role of patients and their health cards in integrated eHealth environments.

Hildebrand, Claudia. Pharow, Peter. Blobel, Bernd.

Studies in Health Technology & Informatics. 136:629-34, 2008.

Communication and co-operation processes in healthcare and welfare require the involvement of all parties involved, including health professionals as well as patients. Generally, professionals can and will easily communicate via trusted health networks. To enforce both communication and co-operation between professionals and patients and to guarantee the required degree of involvement of patients in shared care environments, smart cards are widely used. They serve as person identifiers on the one hand and as security token on the other hand. Acting as storage media and portable application systems, patient data cards enable patient-controlled exchange and the use of personal health data for specific purposes such as prescription and disease management. Additionally, patient status data such as the emergency data or the immunisation record may be stored in and communicated by patient data cards.

Recognising e-health as part of a cohesive professional community.

FA Roberts, Jean M.

Studies in Health Technology & Informatics. 136:591-6, 2008.

This paper identifies a mechanism for specific professional registration in order to sustain a holistic community fit to practice in informatics to support the health domain. It considers risks and opportunities that have an international resonance, and comments on the areas where multi-national activity could provide additional impetus to improvement of the quality of the profession of health informatics overall. It puts the case for the over-arching term health informatics to be used to maximize synergy and drive up quality, whilst still recognising the specificity and place for more focused descriptive terms. Whilst grounded in the contemporary UK environment, the principles explored in this paper are currently being considered for adoption internationally.

An easy to use and affordable home-based personal eHealth system for chronic disease management based on free open source software.

Burkow, Tatjana M. Vognild, Lars K. Krogstad, Trine. Borch, Njal. Ostengen, Geir. Bratvold, Astrid. Risberg, Marijke Jongsma.

Studies in Health Technology & Informatics. 136:83-8, 2008.

This paper describes an easy to use home-based eHealth system for chronic disease management. We present the design and implementation of a prototype for home based education, exercises, treatment and following-up, with the TV and a remote control as user interface. We also briefly describe field trials of the system for patients with COPD and diabetes, and their experience with the technology.

A second life for eHealth: prospects for the use of 3-D virtual worlds in clinical psychology.

Gorini, Alessandra. Gaggioli, Andrea. Vigna, Cinzia. Riva, Giuseppe.

Journal of Medical Internet Research. 10(3):e21, 2008.

The aim of the present paper is to describe the role played by three-dimensional (3-D) virtual worlds in eHealth applications, addressing some potential advantages and issues related to the use of this emerging medium in clinical practice. Due to the enormous diffusion of the World Wide Web (WWW), telepsychology, and telehealth in general, have become accepted and validated methods for the treatment of many different health care concerns. The introduction of the Web 2.0 has facilitated the development of new forms of collaborative interaction between multiple users based on 3-D virtual worlds. This paper describes the development and implementation of a form of tailored immersive e-therapy called p-health whose key factor is interreality, that is, the creation of a hybrid augmented experience merging physical and virtual worlds. We suggest that compared with conventional telehealth applications such as emails, chat, and videoconferences, the interaction between real and 3-D virtual worlds may convey greater feelings of presence, facilitate the clinical communication process, positively influence group processes and cohesiveness in group-based therapies, and foster higher levels of interpersonal trust between therapists and patients. However, challenges related to the potentially addictive nature of such virtual worlds and questions related to privacy and personal safety will also be discussed.

An analysis of factors underlying e-health disparities.

Baur, Cynthia.

Cambridge Quarterly of Healthcare Ethics. 17(4):417-28, 2008.

A methodology for shifting the focus of e-health support design onto user needs: a case in the homecare field.

De Rouck, Sofie. Jacobs, An. Leys, Mark.

International Journal of Medical Informatics. 77(9):589-601, 2008 Sep.

BACKGROUND: Epidemiological shifts, financial pressures and changing policy priorities in healthcare initiate reflections on innovative ways to deliver care. Technologies offer opportunities to change health services delivery. One of the emerging fields is telehomecare-applications. Yet, these applications are not always adapted to the user needs and characteristics of the homecare setting, resulting in "system failure". OBJECTIVES: We describe a generic methodological model to incorporate user perspectives in the design and development process of e-health systems. The model aims at grounding the choice of the technology in a clear understanding of the homecare field, and on interactive reflections with the technology developers. METHODS AND RESULTS: The methodological model develops over three phases. A first phase aims to identify and to select potential patient groups for which the technology will be developed: It holds (a) gathering of epidemiological data; (b) identifying relevant inclusion criteria to select patient groups; (c) qualitative weighting based on the inclusion criteria to include potential patient groups and (d) plenary discussion with the technology developers. In a second phase, the particular needs of the selected patient groups are assessed through literature review, document analysis and explorative interviews with key informants. In the third phase, "social" use cases are developed in which the use of potential technologies is written as virtual storylines. The writing of the use cases is prepared through a semi-structured questionnaire for all partners listing the "visions and expectations on the technology and user context". The use cases are the source documents for a plenary discussion with the technology developers in which priorities are set for functionalities of the e-homecare platform. The methodological approach is illustrated within the Coplintho-project. It is a Flemish initiative developing an e-homecare platform offering a package of services on a dedicated device to support the social integration and 'independent living' of people in their home environment. DISCUSSION: Our methodological approach provides a practical framework for understanding and considering user perspectives. The application of the method within the development of the Coplintho-e-homecare platform demonstrated its usefulness. The experience within the Coplintho-pilot project learned important lessons about the operational use of the method. The methodology is time-consuming and requires scientific input to assess and to document potential user needs, requiring specific means and human resources. The method also requires a very explicit project management of the preparatory phase.

eHealth--ein Wachtumsmarkt fur die Pflege.

[e-Health--a market to watch in nursing]. [German]

Trill, Roland.

Pflege Zeitschrift. 61(5):241, 2008 May.

An integrated strategy of knowledge application for optimal e-health implementation: a multi-method study protocol.

Gagnon, Marie-Pierre. Legare, France. Fortin, Jean-Paul. Lamothe, Lise. Labrecque, Michel. Duplantie, Julie.

BMC Medical Informatics & Decision Making. 8:17, 2008.

BACKGROUND: E-health is increasingly valued for supporting: 1) access to quality health care services for all citizens; 2) information flow and exchange; 3) integrated health care services and 4) interprofessional collaboration. Nevertheless, several questions remain on the factors allowing an optimal integration of e-health in health care policies, organisations and practices. An evidence-based integrated strategy would maximise the efficacy and efficiency of e-health implementation. However, decisions regarding e-health applications are usually not evidence-based, which can lead to a sub-optimal use of these technologies. This study aims at understanding factors influencing the application of scientific knowledge for an optimal implementation of e-health in the health care system. METHODS: A three-year multi-method study is being conducted in the

Province of Quebec (Canada). Decision-making at each decisional level (political, organisational and clinical) are analysed based on specific approaches. At the political level, critical incidents analysis is being used. This method will identify how decisions regarding the implementation of e-health could be influenced or not by scientific knowledge. Then, interviews with key-decision-makers will look at how knowledge was actually used to support their decisions, and what factors influenced its use. At the organisational level, e-health projects are being analysed as case studies in order to explore the use of scientific knowledge to support decision-making during the implementation of the technology. Interviews with promoters, managers and clinicians will be carried out in order to identify factors influencing the production and application of scientific knowledge. At the clinical level, questionnaires are being distributed to clinicians involved in e-health projects in order to analyse factors influencing knowledge application in their decision-making. Finally, a triangulation of the results will be done using mixed methodologies to allow a transversal analysis of the results at each of the decisional levels. RESULTS: This study will identify factors influencing the use of scientific evidence and other types of knowledge by decision-makers involved in planning, financing, implementing and evaluating e-health projects. CONCLUSION: These results will be highly relevant to inform decision-makers who wish to optimise the implementation of e-health in the Quebec health care system. This study is extremely relevant given the context of major transformations in the health care system where e-health becomes a must.

Network design for telemedicine--e-health using satellite technology.

Graschew, Georgi. Roelofs, Theo A. Rakowsky, Stefan. Schlag, Peter M.

Studies in Health Technology & Informatics. 131:67-82, 2008.

Over the last decade various international Information and Communications Technology networks have been created for a global access to high-level medical care. OP 2000 has designed and validated the high-end interactive video communication system WinVicos especially for telemedical applications, training of the physician in a distributed environment, teleconsultation and second opinion. WinVicos is operated on a workstation (WoTeSa) using standard hardware components and offers a superior image quality at a moderate transmission bandwidth of up to 2 Mbps. WoTeSa / WinVicos have been applied for IP-based communication in different satellite-based telemedical networks. In the DELTASS-project a disaster scenario was analysed and an appropriate telecommunication system for effective rescue measures for the victims was set up and evaluated. In the MEDASHIP project an integrated system for telemedical services (teleconsultation, teleelectro-cardiography, telesonography) on board of cruise ships and ferries has been set up. EMISPHER offers an equal access for most of the countries of the Euro-Mediterranean area to on-line services for health care in the required quality of service. E-learning applications, real-time telemedicine and shared management of medical assistance have been realized. The innovative developments in ICT with the aim of realizing a ubiquitous access to medical resources for everyone at any time and anywhere (u-Health) bear the risk of creating and amplifying a digital divide in the world. Therefore we have analyzed how the objective needs of the heterogeneous partners can be joined with the result that there is a need for real integration of the various platforms and services. A virtual combination of applications serves as the basic idea for the Virtual Hospital. The development of virtual hospitals and digital medicine helps to bridge the digital divide between different regions of the world and enables equal access to high-level medical care. Pre-operative planning, intra-operative navigation and minimally-invasive surgery require a digital and virtual environment supporting the perception of the physician. As data and computing resources in a virtual hospital are distributed over many sites the concept of the Grid should be integrated with other communication networks and platforms.

The do's and don't's when you establish telemedicine and e-health (not only) in developing countries.

FA Latifi, Rifat.

Studies in Health Technology & Informatics. 131:39-43, 2008.

One may face obstacles in implementing technological advances in our environment or exporting technology and knowledge by disseminating telemedicine and e-health in the rural areas or to the developing countries, or just by simply trying to advance already established medical systems. Dr. Weinstein et al have eloquently put

all you need to know it order "to put it all together," however I wanted to alert you to few other issues may become important as you proceed. So let's talk first about obstacles as they vary. They may be as simple as ignorance, or as complex as political or national lack of vision, and leadership. Frankly, there are no obstacles that cannot be overcome, and there are no valid reasons that will justify failure to start and failure to succeed. We need to adopt the slogan "Failure is not an option." Determination to succeed is often associated with serious difficulties and growing pain, but that is not a good reason why you should stop.

eHealth interoperability.

Hammond, W Ed.

Studies in Health Technology & Informatics. 134:245-53, 2008.

For improving quality and safety of patient's care, for keeping the costs of health services, but also for successfully managing public health communication and cooperation between all stakeholders is inevitable. Such interoperability can be provided at different levels from simple data exchange up to business interoperability. The paper introduces those interoperability levels and international standards specifying and facilitating them. In that context, the expression of business requirements by domain analysis models or story boards as well as by functional models of the core applications enabling interoperability like EHR systems have been tackled. The role of decision support systems and infrastructural services has been considered as well. [References: 21]

Current status of national eHealth and telemedicine development in Finland.

Reponen, Jarmo. Winblad, Ilkka. Hamalainen, Paivi.

Studies in Health Technology & Informatics. 134:199-208, 2008.

This eHealth paper shows the results of a survey produced by FinnTelemedicum, Centre of Excellence for Telehealth at the University of Oulu and STAKES (National Research and Development Centre for Welfare and Health development in Finland) under assignment of the Finnish Ministry of Social Affairs and Health. The survey shows the status and trends of the usage of eHealth applications in the Finnish health care in 2005. The results are compared to an earlier survey made in 2003. The 2005 survey included all service providers in public and private medical services: hospital districts or central hospitals for secondary/tertiary care, primary health care centers and a sample of private sector service providers. The results show that the usage of eHealth applications has greatly progressed throughout the entire health care delivery system. The current wide utilization of the eHealth applications in Finnish health care forms a solid basis for developing future eHealth services. Finland has taken the initiative to build a national archive for electronic health data with citizen access by 2011.

ICW eHealth Framework.

Klein, Karsten. Wolff, Astrid C. Ziebold, Oliver. Liebscher, Thomas.

Studies in Health Technology & Informatics. 134:177-90, 2008.

The ICW eHealth Framework (eHF) is a powerful infrastructure and platform for the development of service-oriented solutions in the health care business. It is the culmination of many years of experience of ICW in the development and use of in-house health care solutions and represents the foundation of ICW product developments based on the Java Enterprise Edition (Java EE). The ICW eHealth Framework has been leveraged to allow development by external partners - enabling adopters a straightforward integration into ICW solutions. The ICW eHealth Framework consists of reusable software components, development tools, architectural guidelines and conventions defining a full software-development and product lifecycle. From the perspective of a partner, the framework provides services and infrastructure capabilities for integrating applications within an eHF-based solution. This article introduces the ICW eHealth Framework's basic architectural concepts and technologies. It provides an overview of its module and component model,

describes the development platform that supports the complete software development lifecycle of health care applications and outlines technological aspects, mainly focusing on application development frameworks and open standards.

eHealth: Connecting Health Care and Public Health.

Balas, E Andrew. Krishna, Santosh. Tessema, Tsigeweini A.

Studies in Health Technology & Informatics. 134:169-76, 2008.

Reducing risks and improving benefits to the patients are requirements health professionals are faced with in their daily work. Furthermore, cuts in health funds and the competition for budgets require to enhancing efficacy and efficiency of health services. For meeting both challenges, adequate information and knowledge is needed, which can be gathered from documentation systems such as Electronic Health Records or Personal Health Records (PHRs), but also by performing dedicated clinical studies such as randomized controlled trials (RCTs) or cohort studies. Based on a literature analysis, quality of, and benefits from, RCTs have been analyzed. The benefits from connecting public health and PHRs are discussed in some details. [References: 13]

eHealth in Europe: from Vision to Reality.

Iakovidis, Ilias. Purcarea, Octavian.

Studies in Health Technology & Informatics. 134:163-8, 2008.

It is now 20 years that the European Union supports research and development of information and communication technologies based tools for healthcare (eHealth). From 1989 till today, funding has continually been increased, initiating new research, complementing Member State initiatives, strengthening European industrial competitiveness, and tackling new health and social problems related to the free movement of people in the EU. By now, many of the earlier visions and dreams have been realised or are close to wider implementation. Accordingly, the European Commission is now providing strong support also for market validation and implementation of eHealth solutions and services, and at the health policy level. Examples are the recent eHealth Action Plan, annual High Level Ministerial Conferences, an upcoming Recommendation on European eHealth Interoperability, or the Member States-led Large Scale Pilot on a pan-European core patient summary and ePrescribing. This will be complemented by a Lead Market Initiative identifying eHealth as a core future innovation field. Growing cooperation with counterparts in the USA and elsewhere underline that eHealth is becoming a global reality. A more than 40 year old vision is now closer to global reality for the better of all citizens. [References: 18]

eHealth for service delivery - special considerations for resource-challenged health systems.

Kwankam, S Yunkap.

Studies in Health Technology & Informatics. 134:97-106, 2008.

Education in biomedical informatics and eHealth.

Zvarova, Jana.

Studies in Health Technology & Informatics. 134:27-32, 2008.

eHealth and IMIA's Strategic Planning Process - IMIA conference introductory address.

Murray, Peter. Haux, Reinhold. Lorenzi, Nancy.

Studies in Health Technology & Informatics. 134:15-20, 2008.

The International Medical Informatics Association (IMIA) is the only organization in health and biomedical informatics which is fully international in scope, bridging the academic, health practice, education, and health industry worlds through conferences, working groups, special interest groups and publications. Authored by the IMIA Interim Vice President for Strategic Planning Implementation and co-authored by the current IMIA President and the IMIA Past-President, the intention of this paper is to introduce IMIA's current strategic planning process and to set this process in relation to 'eHealth: Combining Health Telematics, Telemedicine, Biomedical Engineering and Bioinformatics to the Edge', the theme of this conference. From the viewpoint of an international organization such as IMIA, an eHealth strategy needs to be considered in a comprehensive way, including broadly stimulating high-quality health and biomedical informatics research and education, as well as providing support to bridging outcomes towards a new practice of health care in a changing world.

Introduction into advanced eHealth -- the Personal Health challenge.

Blobel, Bernd.

Studies in Health Technology & Informatics. 134:3-14, 2008.

For improving quality and efficiency of health delivery under the wellknown burdens, the health service paradigm has to change from organization-centered over process-controlled to personal health. Established in connection to the already existing International Center for Telemedicine, the eHealth Competence Center in Regensburg has been dedicated to advance research, development, education and administration of comprehensive eHealth. In cooperation with internal and external partners, the Personal Health paradigm comprising of health telematics, telemedicine, biomedical engineering, bioinformatics and genomics is pushed ahead. The paper introduces the underlying paradigms, requirements, architectural framework and development processes for comprehensive service-oriented Personal Health interoperability chains.

A methodological and operative framework for the evaluation of an e-health project.

Buccoliero, Luca. Calciolari, Stefano. Marsilio, Marta.

International Journal of Health Planning & Management. 23(1):3-20, 2008 Jan-Mar.

Assessing public sector ICT investments represents the premise for successful implementation of an e-health strategy. The recent literature stresses the importance of going beyond the mere financial and/or technical dimensions of the analysis. Consequently, the paper proposes an example of e-health project evaluation aiming to develop measures which get close to the notion of benefits to the different stakeholders involved: top management, patients, local community. The case study refers to an Italian health care organization that implemented a project of digitalization of its clinical reports production few years ago. Based on on-field research, different approaches are used to assess costs and benefits from different stakeholders' perspectives. The results of a multidimensional evaluation are reported to emphasize the need for different measures to assess the sustainability of an e-health project according to the financial convenience, the social role of the organization, and the contingent situation.

An assessment of technology-based service encounters & network security on the e-health care systems of medical centers in Taiwan.

Chang, Hsin Hsin. Chang, Ching Sheng.

BMC Health Services Research. 8:87, 2008.

BACKGROUND: Enhancing service efficiency and quality has always been one of the most important factors to heighten competitiveness in the health care service industry. Thus, how to utilize information technology to reduce work load for staff and expeditiously improve work efficiency and healthcare service quality is presently the top priority for every healthcare institution. In this fast changing modern society, e-health care systems are currently the best possible way to achieve enhanced service efficiency and quality under the restraint of healthcare cost control. The electronic medical record system and the online appointment system are the core

features in employing e-health care systems in the technology-based service encounters. METHODS: This study implemented the Service Encounters Evaluation Model, the European Customer Satisfaction Index, the Attribute Model and the Overall Affect Model for model inference. A total of 700 copies of questionnaires from two authoritative southern Taiwan medical centers providing the electronic medical record system and the online appointment system service were distributed, among which 590 valid copies were retrieved with a response rate of 84.3%. We then used SPSS 11.0 and the Linear Structural Relationship Model (LISREL 8.54) to analyze and evaluate the data. RESULTS: The findings are as follows: (1) Technology-based service encounters have a positive impact on service quality, but not patient satisfaction; (2) After experiencing technology-based service encounters, the cognition of the service quality has a positive effect on patient satisfaction; and (3) Network security contributes a positive moderating effect on service quality and patient satisfaction. CONCLUSION: It revealed that the impact of electronic workflow (online appointment system service) on service quality was greater than electronic facilities (electronic medical record systems) in technology-based service encounters. Convenience and credibility are the most important factors of service quality in technology-based service encounters that patients demand. Due to the openness of networks, patients worry that transaction information could be intercepted; also, the credibility of the hospital involved is even a bigger concern, as patients have a strong sense of distrust. Therefore, in the operation of technology-based service encounters, along with providing network security, it is essential to build an atmosphere of psychological trust.

Tracing and cataloguing knowledge in an e-health cardiology environment.

Gortzis, L G. Nikiforidis, G.

Journal of Biomedical Informatics. 41(2):217-23, 2008 Apr.

In an e-health cardiology environment, the current knowledge engineering systems can support two knowledge processes; the knowledge tracing, and the knowledge cataloguing. We have developed an n-tier system capable of supporting these processes by enabling human collaboration in each phase along with, a prototype scalable knowledge engineering tactic. A knowledge graph is used as a dynamic information structure. Biosignal data (values of HR, QRS, and ST variables) from 86 patients were used; two general practitioners defined and updated the patients' clinical management protocols; and feedback was inserted retrospectively. Several calibration tests were also performed. The system succeeded in formulating three knowledge catalogues per patient, namely, the "patient in life", the "patient in time", and the "patient in action". For each patient the clinically accepted normal limits of each variable were predicted with an accuracy of approximately 95%. The patients' risk-levels were identified accurately, and in turn, the errors were reduced. The data and the expert-oriented feedback were also time-stamped correctly and synchronized under a common time-framework. Knowledge processes optimization necessitates human collaboration and scalable knowledge engineering tactics. Experts should be responsible for resenting or rejecting a process if it downgrades the provided healthcare quality.

The path towards eHealth: obstacles along the way.

Jadad, A R. Enkin, M W.

Yearbook of Medical Informatics. :84-7, 2006.

OBJECTIVES: The two authors of this article share both a strong interest in, and deep concerns about, the use of eHealth (electronic information and communication technologies for improving or maintaining health). In this article, we identify some unanticipated obstacles to effective use of eHealth. METHODS: We reflected upon the potential of information and communication technologies to transform the health system and its failure to achieve that potential. RESULTS: We chose seven obstacles: the insufficient emphasis on health in eHealth, the lack of time for reflection, the development of a fortress mentality, poor evaluation of efforts, lack of involvement of youth, inequity, and a parochial attitude that precludes economies of scale. Whenever possible, we provided examples of innovative initiatives that illustrate potential ways to meet our current challenges. CONCLUSION: We believe that the obstacles we describe in this article can be overcome. The impediments are not only technological, but also cognitive, financial and political. To succeed will require a major shift from our

ethic of competition to one of generosity, commitment, and collaboration; enlightened, as opposed to narrow, self-interest.

Regulations and standards for wireless applications in eHealth.

Chadwick, Peter E.

Conference Proceedings: ... Annual International Conference of the IEEE Engineering in Medicine & Biology Society. 2007:6171-4, 2007.

Many of the implementations of eHealth require some form of telecommunications facility. Although wired networks can be applicable, there are many areas in which a wireless communications facility is required. The particular method of wireless communication is dependent upon the application: for example, wireless programming of an implantable device such as a pacemaker has vastly different requirements to those of a wireless alarm for a blood oxymeter However, wireless devices have to exist in an electromagnetically shared environment, and it is therefore necessary for the standards and regulations applying to such devices to be so designed as to optimise both the efficient use of the radio spectrum, and the usefulness of the wireless link in the context of eHealth. Such wireless devices currently include the use of such general wireless technologies as Bluetooth, cellular telephony, and RFID, as well as those using radio spectrum shared on a secondary basis intended for communication with medical devices. This paper briefly reviews the current situation regarding such standards, including the potential reliability and the degree of subjectivity to interference, and looks to the probable areas of future development in radio standards that will be required to meet the increasing demands of the technologies inherent in the growth of eHealth. [References: 0]

Lost sample recovering of ECG signals in e-health applications.

Prieto-Guerrero, Alfonso. Mailhes, Corinne. Castanie, Francis.

Conference Proceedings: ... Annual International Conference of the IEEE Engineering in Medicine & Biology Society. 2007:31-4, 2007.

This paper shows the interest of an interpolation method based on parametric modeling to retrieve missing samples in ECG signals. This problem occurs more and more with the emergence of telemedicine applications. The different links (fixed access network (PSTN), mobile access network (GSM/GPRS and future UMTS) or satellite interfacing (DVB-RCS technology)) involved in e-health applications are liable to induce errors on the transmitted data. These errors/losses can occur anytime and anywhere (according to the channel availability, memory overflows, protocols, etc) during a transmission process. Therefore the recovering of missing samples for biomedical signals is of great interest. The method used in this paper is based on a left-sided and right-sided autoregressive model, i.e., the interpolation algorithm uses the samples before and after the sequence of missing samples. An objective measure is used to assess the method performance. Results show that this interpolation method represents a really suitable technique to ECG signal reconstruction in a possible corrupted transmission.

Towards e-Health device interoperability: the Spanish experience in the telemedicine research network.

de Toledo, P. Galarraga, M. Martinez, I. Serrano, L. Fernandez, J. Del Pozo, F.

Conference Proceedings: ... Annual International Conference of the IEEE Engineering in Medicine & Biology Society. 1:3258-61, 2006.

The expansion of e-Health solutions is hindered by the high costs and low flexibility of home and mobile telemonitoring systems. This situation may be improved by the use of standards to design open, plug-and-play and interoperable devices. This work describes the joint efforts of three research groups in Spain towards the interoperability of their telemonitoring solutions based on the ISO11073/IEEE1073 family of standards.

Performance evaluation of rural e-Health scenarios: users and QoS management.

Martinez, I. Garcia, J. Viruete, E. Fernandez, J.

Conference Proceedings: ... Annual International Conference of the IEEE Engineering in Medicine & Biology Society. 1:5234-7, 2006.

The development of e-Health services in rural environments, where broadband accesses are usually not available, requires a specific analysis of available resources to improve the management of quality of service (QoS). This work studies the sharing of resources among several users and the system efficiency in rural areas, guaranteeing QoS. The results obtained show that, with the premises considered in this study, a rural centre can establish a maximum number of simultaneous real-time services with the hospital, which varies between 2 and 3 for each 64 kb/s of available link capacity.

Application parameters optimization to guarantee QoS in e-Health services.

Martinez, I. Garcia, J. Viruete, E. Fernandez, J.

Conference Proceedings: ... Annual International Conference of the IEEE Engineering in Medicine & Biology Society. 1:5222-5, 2006.

The wide development of multimedia clinical applications and the use of inter and intra-hospital communication networks require a specific analysis to increase the efficiency of e-Health services. In this paper we study the optimum combinations of the application parameters needed to fulfil the quality of service (QoS) thresholds according to monitored network measurements in the new healthcare services. A remote diagnosis service has been evaluated establishing good-performance areas, depending on available resources.

Technology assessment of resources for the emerging US e-health infrastructure: a proposed interoperability model.

Lorence, Daniel. Sivaramakrishnan, Anusha.

International Journal of Electronic Healthcare. 2(3):291-303, 2006.

Recent mandates in the USA related to the creation of a National Health Information Infrastructure (NHII) highlight the need for seamless interconnection of healthcare providers. As a necessary precondition, however, an interoperable infrastructure is needed to help clinicians get access to critical healthcare information upon which their clinical and/or treatment decisions can be based. Relatively little has been done to identify or assess commercially available technologies that might work together to meet the required interoperability requirements. In this exploratory technology assessment we examine three core technologies that could serve as a foundation for secure NHII interoperability: Source-Independent Access Control (SIAC), vault process technology and database-independent multimedia capability.

An e-health trend plan for the Jordanian health care system: a review.

Rawabdeh, Ali Ahamd Awad.

International Journal of Health Care Quality Assurance. 20(6):516-31, 2007.

PURPOSE: The purpose of this research is to examine the potential of e-health by focusing explicitly on the delivery of health care products and services. The examination of e-health activity is guided by one broad research question, "What is the potential for constructing e-health strategy as an innovative health technology?". A great amount of attention has been given to e-health activity in the present day. However important this form of e-health is, this type of service simply does not face the same constraints that must be addressed by those actually delivering health care services. DESIGN/METHODOLOGY/APPROACH: The researchers employed a qualitative data collection technique to formulate more examples and cases to derive lessons for Jordan. Phone interviews in a random sample were conducted with corporate officers in Jordan in

order to reveal the internal organizational structure and business trends, interface issues, marketing strategies, as well as comparing and contrasting the online health world to the traditional health care realm. FINDINGS: Internet-related projects is a top priority for health care information technology executives in the present day, with a cautious approach toward "e-health", as many products have yet to mature, and that the "click and mortar" model may perhaps be the optimal strategy for e-health in Jordan. RESEARCH LIMITATIONS/IMPLICATIONS: This paper reviews the e-health trends to demonstrate the tremendous potential for health-related commercial activity on the internet. However, the researcher examining the barriers facing e-health to the Jordanian health system also pointed out almost insurmountable challenges. PRACTICAL IMPLICATIONS: Despite the apparent promise of e-health, its instability is measured by its failure so far to systematically penetrate the organization of health care. Beyond the pragmatic negotiation of e-health in the immediate context of clinical practice, there are wider issues about how the development/implementation of e-health is funded, about its organization and management at the policy level; and about its potential medico-legal risks. ORIGINALITY/VALUE: It is hoped that the handful of ventures into cyber medicine appears to be coming from a few enterprising physicians who have set up medical practices on the Web. [References: 31]

WWW-based e-teaching of normal anatomy as an introduction to telemedicine and e-health.

Glinkowski, Wojciech. Ciszek, Bogdan.

Telemedicine Journal & E-Health. 13(5):535-44, 2007 Oct.

Telemedicine, e-health, and e-education are becoming a new reality in studying medicine. A wide range of medical educational courses are available on the Web, including basic medical science resources. The aim of the study was to evaluate the frequency of visiting a Web page accordingly to didactic events during academic activity and to survey medical students about how they assess the Web page-assisted anatomy learning and whether it gives them any prerequisite to telemedicine in future. Two questionnaires were distributed among the medical university students and then collected and analyzed. The Web page was statistically analyzed to evaluate the Department's Web page usability. From January 1, 2003 to December 31, 2005 the Anatomy Department Web page was visited by students 147,425 times, in 2003--34,534, 2004--45,771, and 2005--67,120. The most often visited Web pages were the practical exam-- pin test image galleries. Overall 539 medical students were surveyed about Anatomy Department Web page at the end of the academic year 2005/2006. Most of the students (41.7%) used the Web page content often, others (38.7%) infrequently and the rest (12.4%) rarely. Students attempting to amend the final anatomy practical exam occupied the Web page for an hour (37.9%) or 2-3 hours (48.5%) while learning. The majority of surveyed students knew the term "telemedicine" well (22.3%) or rather knew (60.2%). The students were convinced that skills gained during utilizing the Anatomical Web page would enhance their abilities to practice telemedicine in the future (85.4%). Most of the surveyed students have a positive attitude toward the use of didactic Internet resources. A significant number of students learn about telemedicine very early in medical studies, and this may be a favorable prognostic factor for further telemedicine study and use later in career.

Revolution or evolution? An analysis of E-health innovation and impact using a hypercube model.

Wu, Jen-Her. Huang, An-Sheng. Hisa, Tzyh-Lih. Tsai, Hsien-Tang.

International Journal of Electronic Healthcare. 2(1):12-34, 2006.

This study utilises a hypercube innovation model to analyse the changes in both healthcare informatics and medical related delivery models based on the innovations from Tele-healthcare, electronic healthcare (E-healthcare), to mobile healthcare (M-healthcare). Further, the critical impacts of these E-health innovations on the stakeholders: healthcare customers, hospitals, healthcare complementary providers and healthcare regulators are identified. Thereafter, the critical capabilities for adopting each innovation are discussed.

Poor eHealth literacy and consumer-directed health plans: a recipe for market failure

Miller, Vail M.

Comment on: Am J Bioeth. 2007 Nov;7(11):5-10; PMID: 18027287
American Journal of Bioethics. 7(11):20-2; discussion W1-2, 2007 Nov.

Wearable and portable eHealth systems. Technological issues and opportunities for personalized care. [Review] [10 refs]

Gatzoulis, Loukianos. Iakovidis, Ilias.

IEEE Engineering in Medicine & Biology Magazine. 26(5):51-6, 2007 Sep-Oct.

Image, signal, and distributed data processing for networked eHealth applications.

Maglogiannis, Ilias. Wallace, Manolis. Karpouzis, Kostas.

IEEE Engineering in Medicine & Biology Magazine. 26(5):14-7, 2007 Sep-Oct.

A national study of eHealth standardization in Finland--goals and recommendations.

Mykkanen, Juha. Korhonen, Maritta. Porrasmaa, Jari. Tuomainen, Tuula. Ensio, Antero.

Medinfo. 12(Pt 1):469-73, 2007.

The role of standards is constantly increasing in health services, electronic health records, and eHealth applications. There are many areas of standardization which affect the healthcare work and health information systems. On a national level, the organization of the development and support for standardization should be a key priority. This paper summarizes a national study in Finland which reviewed the current status of eHealth standardization and made recommendations for the national standardization and the use of standards. The recommendations are related to the organization model and balanced participation, international and cross-domain collaboration and quality assurance of standards-related activities. In addition, education and support services and support for introductions and pilots are recommended to improve the know-how of standards in system acquisitions.

Challenges in telemedicine and eHealth: lessons learned from 20 years with telemedicine in Tromso.

Hartvigsen, Gunnar. Johansen, Monika A. Hasvold, Per. Bellika, Johan Gustav. Arsand, Eirik. Arild, Eli. Gammon, Deede. Pettersen, Sture. Pedersen,
Steinar.

Medinfo. 12(Pt 1):82-6, 2007.

The Norwegian Centre for Telemedicine (NST) has, over the past two decades, contributed to the development and implementation of telemedicine and ehealth services in Norway. From 2002, NST has been a WHO Collaboration Center for telemedicine. In August 1996, Norway became the first country to implement an official telemedicine fee schedule making telemedicine services reimbursable by the national health insurer. Telemedicine is widely used in Northern Norway. Since the late 1980's, the University Hospital of North-Norway has experience in the following areas: teleradiology, telepathology, teledermatology, teleotorhinolaryngology (remote endoscopy), remote gastroscopy, tele-echocardiography, remote transmission of ECGs, telepsychiatry, teleophthalmology, teledialysis, teleemergency medicine, teleoncology, telecare, telegeriatric, teledentistry, maritime telemedicine, referrals and discharge letters, electronic delivery of laboratory results and distant teaching for healthcare personnel and patients. Based on the result achieved, the health authority in North-Norway plans to implement several large-scale telemedicine services:

Teleradiology (incl. solutions for neurosurgery, orthopedic, different kinds of surgery, nuclear medicine, acute traumatic and oncology), digital communication and integration of patient data, and distant education. In addition, the following services will also be considered for large-scale implementation: teledialysis, prehospital thrombolysis, telepsychiatry, teledermatology. Last in line for implementation are: pediatric, district medical center (DMS), teleophthalmology and ear-nose-throat (ENT).

Towards sustainable e-health networks: does modeling support efficient management and operation?.

Staemmler, Martin.

Medinfo. 12(Pt 1):53-7, 2007.

e-Health Networks require cost-effective approaches for routine operation to achieve long-lasting sustainability. By using a model to represent (i) the network's enterprise functions, (ii) the applications used and (iii) the physical implementations, the tasks of management, adapting to changes and providing continued maintenance can be effectively supported. The paper discusses approaches for modeling, assesses their usefulness for the above tasks and decides on the use of the 3LGM meta model. Based on this concept, three ways for modeling the specific properties of an e-Health network are presented, leading to the decision to represent the hospitals involved in only one layer. As a result the model derived is presented, assessed and proved to support strategic management, day-to-day maintenance and documentation.

Bermuda Triangle or three to tango: generation Y, e-health and knowledge management.

Yee, Kwang Chien.

Medinfo. 12(Pt 2):1184-8, 2007.

Generation Y workers are slowly gathering critical mass in the healthcare sector. The sustainability of future healthcare is highly dependent on this group of workers. This generation of workers loves technology and thrives in stimulating environments. They have great thirst for life-experience and therefore they move from one working environment to the other. The healthcare system has a hierarchical operational, information and knowledge structure, which unfortunately might not be the ideal ground to integrate with generation Y. The challenges ahead present a fantastic opportunity for electronic health implementation and knowledge management to flourish. Generation Y workers, however, have very different expectation of technology utilisation, technology design and knowledge presentation. This paper will argue that a clear understanding of this group of workers is essential for researchers in health informatics and knowledge management in order to provide socio-technical integrated solution for this group of future workers. The sustainability of a quality healthcare system will depend upon the integration of generation Y, health informatics and knowledge management strategies in a re-invented healthcare system.

e-Health in Scotland: setting a baseline for stakeholder alignment.

Levy, Sharon. Casey, Anne. Wallis, Alison.

Medinfo. 12(Pt 2):1102-5, 2007.

Gaining knowledge of nurses' attitudes towards and understanding of various aspects of the Scottish e-Health programme is vital for needed 'stakeholder alignment'. This paper is focused on the Scottish results from a large on-line survey carried out in 2006, across the UK. Key findings, identified through analysis of both qualitative and quantitative data, are discussed. Results suggest that overall there is willingness and enthusiasm to engage and to see the modernisation of the NHS in Scotland underpinned by advanced and effective IT systems. It also shows that nurses have clear ideas about how information technology could help them and their patients in delivering safe care that enhances the visibility of the nursing contribution to care outcomes. It is argued that results help in setting a base-line from which to judge the success or otherwise of the needed e-Health clinical change management programme within clinical settings.

Innovating eHealth in the Netherlands.

FA Dumay, Adrie C M.

Studies in Health Technology & Informatics. 127:157-65, 2007.

Innovation is essential to improve accessibility, effectiveness and efficiency of healthcare delivery. eHealth promises these improvements provided that it complies to essential requirements with respect to quality and patient safety. eHealth must be implemented thoughtfully to yield full benefit to the patient. However, there exists no structured framework of essential requirements to guide development, implementation and usage. The scope of application of eHealth is wide and new technology is introduced continuously. So, the framework of essential requirements must evolve as well to support and encourage innovation. The author proposes a process for continuous verification and validation of eHealth throughout development, implementation and use and a method to continuously update the framework of essential requirements.

E-health development policies in new member states in Central Europe.

Duplaga, Mariusz.

World Hospitals & Health Services. 43(2):34-8, 2007.

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.

EHealth.

Crombie, H David.

Connecticut Medicine. 71(7):431-2, 2007 Aug.

Barriers to the use of e-health technology in nurse practitioner-patient consultations.

Adams, Ann. Adams, Rachel. Thorogood, Margaret. Buckingham, Christopher.

Informatics in Primary Care. 15(2):103-9, 2007.

PURPOSE: This paper examines primary care nurse practitioners' (NPs') use of information available via e-health technology (EHT) within consultations. It explores which information resources NPs use in clinical decision making, their comparative use of electronic versus paper-based and human information resources, the reasons behind their choices and how the use of different resources impacts on patient interactions. METHODS: Semi-structured interviews were undertaken with 12 NPs recruited from 11 different general practitioner (GP) practices and five primary care trusts (PCTs) within the West Midlands South Strategic Health Authority, UK. FINDINGS: The key finding was that for NPs an effective information resource is one that provides sufficient information to generate a patient management plan rapidly. Speed, familiarity and trust are vital ingredients for regular use. Paper-based information resources therefore retain a significant role, and

together with human information resources are still more frequently used than most electronic, and particularly web-based, resources. The latter are not yet well established within the context of patient consultations. Electronic clinical support systems (such as Mentor, Prodigy and GPnotebook) are regularly used, however, because they are often linked electronically to patient records, and generate brief information in a form accessible to both nurses and patients. By contrast, searching for information from web-based resources was considered time-consuming, technically difficult and disruptive to patients. All NPs reported some negative effects on patients of using computers: mostly disrupted rapport and longer consultations. However, the majority had developed ways of working to overcome these difficulties and that helped them to maintain their patient-centred focus. CONCLUSIONS: Study NPs had received only very limited information technology (IT) training, but nevertheless were enthusiastic about computer use. This suggests that with further training they could adapt their practice to embrace more EHT, which would enhance their ability to be more autonomous and to base their practice on sound clinical evidence.

Internet methods for delivering behavioral and health-related interventions (eHealth)

Strecher, Victor.

Annual Review of Clinical Psychology. 3:53-76, 2007.

Emerging communications technologies allow us to potentially reach more individuals with effective health-related advice and information at a very low cost. As we begin a new era of "personalized medicine," advances in consumer health informatics will parallel and eventually merge with those being made in bioinformatics (e.g., genomic information), medical informatics (e.g., electronic medical records), and public health informatics (e.g., disease surveillance). This article discusses access, use, quality, and types of eHealth programming with a focus on the Internet as the initial instantiation of this programming. Also discussed are criteria relevant to the dissemination of eHealth programming in real-world settings. Finally, possible directions for future eHealth research are presented. [References: 134]

From Health Information Systems to eHealth - A special topic issue on the IMIA HIS Working Conference in Oeiras, Portugal.

Kuhn, K A. Giuse, D A. Lapao, L. Wurst, S H R.

Methods of Information in Medicine. 46(4):450, 2007.

Pervasive E-health services using the DVB-RCS communication technology.

Vouyioukas, Demosthenes. Maglogiannis, Ilias. Pasias, Vasilios.

Journal of Medical Systems. 31(4):237-46, 2007 Aug.

Two-way satellite broadband communication technologies, such as the Digital Video Broadcasting with Return Channel via Satellite (DVB-RCS) technology, endeavour to offer attractive wide-area broadband connectivity for telemedicine applications, taking into consideration the available data rates, Quality of Service (QoS) provision, survivability, flexibility and operational costs, even in remote areas and isolated regions where the terrestrial technologies suffer. This paper describes a wide-area tele-medicine platform, specially suited for homecare services, based on the DVB-RCS and Wi-Fi communication technologies. The presented platform combines medical data acquisition and transfer, patient remote monitoring and teleconference services. Possible operational scenarios concerning this platform and experimental results regarding tele-monitoring, videoconference and medical data transfer are also provided and discussed in the paper.

eHealth: the foundation for health system transformation.

Hanrahan, Lawrence P.

WMJ. 106(3):112-5, 2007 May.

A national strategy for telemedicine and e-health.

Doarn, Charles R. Merrell, Ronald C.

Telemedicine Journal & E-Health. 13(3):243-4, 2007 Jun.

Biomedical engineering and eHealth in Europe.

Iakovidis, Ilias. Le Dour, Olivier. Karp, Pekka.
IEEE Engineering in Medicine & Biology Magazine. 26(3):26-8, 2007 May-Jun.

Design and evaluation in eHealth: challenges and implications for an interdisciplinary field. [Review] [54 refs]

Pagliari, Claudia.

Journal of Medical Internet Research. 9(2):e15, 2007.

Much has been written about insufficient user involvement in the design of eHealth applications, the lack of evidence demonstrating impact, and the difficulties these bring for adoption. Part of the problem lies in the differing languages, cultures, motives, and operational constraints of producers and evaluators of eHealth systems and services. This paper reflects on the benefits of and barriers to interdisciplinary collaboration in eHealth, focusing particularly on the relationship between software developers and health services researchers. It argues that the common pattern of silo or parallel working may be ameliorated by developing mutual awareness and respect for each others' methods, epistemologies, and contextual drivers and by recognizing and harnessing potential synergies. Similarities and differences between models and techniques used in both communities are highlighted in order to illustrate the potential for integrated approaches and the strengths of unique paradigms. By sharing information about our research approaches and seeking to actively collaborate in the process of design and evaluation, the aim of achieving technologies that are truly user-informed, fit for context, high quality, and of demonstrated value is more likely to be realized. This may involve embracing new ways of working jointly that are unfamiliar to the stakeholders involved and that challenge disciplinary conventions. It also has policy implications for agencies commissioning research and development in this area. [References: 54]

Data integration in eHealth: a domain/disease specific roadmap.

Ure, Jenny. Procter, Rob. Martone, Maryann. Porteous, David. Lloyd, Sharon. Lawrie, Stephen. Job, Dominic. Baldock, Richard. Philp, Alistair. Liewald, Dave. Rakebrandt, Frank. Blaikie, Alan. McKay, Clare. Anderson, Stuart. Ainsworth, John. van Hemert, Jano. Blanquer, Ignacio. Sinnott, Richard. Barillot, Christian. Gibaud, Frank Bernard. Williams, Alan. Hartswood, Mark. Watson, Paul. Smith, Leslie. Burger, Albert. Kennedy, Jessie. Gonzalez-Velez, Horacio. Stevens, Robert. Corcho, Oscar. Morton, Robin. Linksted, Pamela. Deschenes, Mylene. McGilchrist, Mark. Johnson, Paul. Voss, Alex. Gertz, Renate. Wardlaw, Joanna.

Studies in Health Technology & Informatics. 126:144-53, 2007.

The paper documents a series of data integration workshops held in 2006 at the UK National e-Science Centre, summarizing a range of the problem/solution scenarios in multi-site and multi-scale data integration with six HealthGrid projects using schizophrenia as a domain-specific test case. It outlines emerging strategies, recommendations and objectives for collaboration on shared ontology-building and harmonization of data for multi-site trials in this domain.

eHealth research from the user's perspective.

Hesse, Bradford W. Shneiderman, Ben.

American Journal of Preventive Medicine. 32(5 Suppl):S97-103, 2007 May.

The application of information technology (IT) to issues of healthcare delivery has had a long and tortuous history in the United States. Within the field of eHealth, vanguard applications of advanced computing techniques, such as applications in artificial intelligence or expert systems, have languished in spite of a track record of scholarly publication and decisional accuracy. The problem is one of purpose, of asking the right questions for the science to solve. Historically, many computer science pioneers have been tempted to ask "what can the computer do?" New advances in eHealth are prompting developers to ask "what can people do?" How can eHealth take part in national goals for healthcare reform to empower relationships between healthcare professionals and patients, healthcare teams and families, and hospitals and communities to improve health equitably throughout the population? To do this, eHealth researchers must combine best evidence from the user sciences (human factors engineering, human-computer interaction, psychology, and usability) with best evidence in medicine to create transformational improvements in the quality of care that medicine offers. These improvements should follow recommendations from the Institute of Medicine to create a healthcare system that is (1) safe, (2) effective (evidence based), (3) patient centered, and (4) timely. Relying on the eHealth researcher's intuitive grasp of systems issues, improvements should be made with considerations of users and beneficiaries at the individual (patient-physician), group (family-staff), community, and broad environmental levels.

The multiphase optimization strategy (MOST) and the sequential multiple assignment randomized trial (SMART): new methods for more potent eHealth interventions.

Collins, Linda M. Murphy, Susan A. Strecher, Victor.

American Journal of Preventive Medicine. 32(5 Suppl):S112-8, 2007 May.

In this article two new methods for building and evaluating eHealth interventions are described. The first is the Multiphase Optimization Strategy (MOST). It consists of a screening phase, in which intervention components are efficiently identified for inclusion in an intervention or for rejection, based on their performance; a refining phase, in which the selected components are fine tuned and issues such as optimal levels of each component are investigated; and a confirming phase, in which the optimized intervention, consisting of the selected components delivered at optimal levels, is evaluated in a standard randomized controlled trial. The second is the Sequential Multiple Assignment Randomized Trial (SMART), which is an innovative research design especially suited for building time-varying adaptive interventions. A SMART trial can be used to identify the best tailoring variables and decision rules for an adaptive intervention empirically. Both the MOST and SMART approaches use randomized experimentation to enable valid inferences. When properly implemented, these approaches will lead to the development of more potent eHealth interventions.
PT Journal Article. Randomized Controlled Trial. Research Support, N.I.H., Extramural.