



fighting heart disease
and stroke

european heart network

Cardiovascular patients and eHealth – a European Heart Network paper – 2013

About the European Heart Network and cardiovascular diseases

The European Heart Network (EHN) is a Brussels-based alliance of heart foundations and likeminded non-governmental organisations throughout Europe with members in 26 countries. The EHN plays a leading role in the prevention and reduction of cardiovascular diseases, in particular heart disease and stroke, through advocacy, networking, education and patient support, so that they are no longer a major cause of premature death and disability throughout Europe.

What is eHealth?

The World Health Organization (WHO) defines eHealth as “*the use of Information and Communication Technologies (ICT) for health to, for example, treat patients, pursue research, educate students, track diseases, and monitor public health*”.¹ eHealth covers a very large spectrum of applications, from low-technology services, like telephone consultations with a healthcare professional, electronic health records, personal panic button alarms, or electronic medication dispensers, to high-technology devices such as blood pressure and glucose monitors or pulse oximeters measuring blood oxygen levels and/or heart rate.²

Recent initiatives of the European Commission regarding eHealth

In May 2010, the European Commission issued a communication on the Digital Agenda for Europe³ which is the first of the flagship initiatives under the Europe 2020 strategy for smart, sustainable and inclusive growth. It outlines seven priority areas for action. A strategy to invest in eHealth is one of the priorities. The measure provided for in the Digital Agenda aims to promote standardisation, interoperability testing and certification of electronic health records and equipment. Mainly, the European Commission proposes two actions:

1. Undertake pilot actions to equip Europeans with secure online access to their medical health data by 2015 and to achieve widespread deployment of telemedicine services by 2020.
2. Propose a recommendation defining a minimum common set of patient data for interoperability of patient records to be accessed or exchanged electronically across member states by 2012.

¹ <http://www.who.int/topics/ehealth/en/>

² Whole Systems Demonstrator, An Overview of Telecare and Telehealth, http://ec.europa.eu/information_society/activities/einclusion/docs/ageing/wsd_brochure.pdf

³ A Digital Agenda for Europe, 19/05/10, http://ec.europa.eu/information_society/digital-agenda/documents/digital-agenda-communication-en.pdf

Potential benefits of eHealth

Many studies set out the potential benefits of eHealth for the healthcare system. Recently, the UK Department of Health published the first findings of their “Whole System Demonstrator Programme”, which is the largest randomised control trial of eHealth in the world, involving 6 191 patients and 238 GP practices. According to the early results of the report, eHealth, if delivered properly, could achieve a 20% reduction in emergency hospital admissions; a 14% reduction in elective (non-emergency) admissions; another 14% reduction in bed days. Most strikingly, the evaluation demonstrated a 45% reduction in mortality rates for patients involved in the trial with one of these three conditions: diabetes, heart failure and COPD.⁴

The application of eHealth to medication may also bring significant benefits in terms of patient safety. A study commissioned by the Swedish Presidency of the EU showed that 100 000 adverse drug events could be prevented via computerised physician order entry and that 5 million prescription errors could be avoided through the use of electronic prescriptions.⁵

With health expenditure expected to reach 20% of GDP in developed countries by 2020⁶, the development of eHealth solutions can bring economic savings. For instance 9 million bed-days per year could be freed up through the use of electronic health records, corresponding to a value of €3, 7 billion.⁷

Challenges and Questions

The conclusions of numerous studies and projects on eHealth are that applications still face important challenges and raise ethical and practical questions.

From a technical point of view, the main challenge is the **interoperability** of eHealth services. Indeed, for the proper delivery of these applications, end-users (healthcare professional and patients) should be able to use them on any technological platform or system wherever they are located (different Member States, different hospitals, and different regions). Interoperability is crucial both in terms of equity of treatment and of quality of healthcare services.

Another question is the **security of data** transferred and processed (data protection). Patients need to be assured that their medical data are only used for the purpose of their treatments and that sufficient measures are taken to avoid data being retrieved by individuals or legal entities not involved in their medical treatment, including but not limited to health insurers. Conversely, it is recommended that patients should be discouraged from requesting change to or erasing of data if this compromises the treatment outcome.

In a very heterogeneous EU society, every patient is different and will react differently to a proposed healthcare service. Therefore the assessment of patients’ needs for eHealth should be considered by National Health Systems before implementing technological applications. One should not automatically assume that all patients want or need eHealth but recognise that the reaction to new technologies varies between different population groups. Elderly patients may not feel as enthusiastic about nor be as comfortable with technological devices as a younger patient population. Another

⁴ Whole System Demonstrator, Headline Findings, December 2011, http://www.dh.gov.uk/dr_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_131689.pdf

⁵ eHealth on the Council Agenda Daniel Forslund, Ministry of Health and Social Affairs, 2009, <http://www.ehtel.org/activities/event-documentation/anniversary-symposium/files/12a-daniel-forslund-eu-presidency-moh-sweden.pdf>

⁶ PriceWaterHouseCoopers, HealthCast 2020 Creating a Sustainable Future, 2005, <http://www.pwc.com.au/industry/healthcare/assets/Healthcast-2020-exec-summary-2005.pdf>

⁷ eHealth on the Council Agenda Daniel Forslund, Ministry of Health and Social Affairs, 2009, <http://www.ehtel.org/activities/event-documentation/anniversary-symposium/files/12a-daniel-forslund-eu-presidency-moh-sweden.pdf>

factor to consider is the level of **computer literacy**. A recent report of Eurostat showed that in 2011, 24% of the EU population, aged 16-74, had never accessed the Internet, ranging from 4% in Iceland to 54% in Romania; and 22% had never used a computer, ranging from 4% in Sweden to 50% in Romania.⁸

Many patients may put more **trust** in direct interaction with their doctor or other healthcare professional. It is necessary to ensure patients that, when using an eHealth application, a human person is behind it, monitoring the data received. Moreover, when proposed an eHealth application, patients need to be reassured that a person can be contacted in case of any adverse event. In a review carried out by Inglis et al for the Cochrane Collaboration⁹, patient satisfaction with eHealth application was high, proving that concerns can certainly be addressed if eHealth services are effectively communicated. It is important for patients to understand clearly what they are being proposed and that the service is an added value likely to benefit their health outcome. If the **communication** about personal benefits is not well thought through, patients might be led to consider eHealth as a reduction of services leaving them with a feeling of being “second-class” patients.

Examples of eHealth applied to cardiovascular diseases (CVD)

Several eHealth applications are already proposed to CVD patients. Some recent studies seem to indicate that, if implemented efficiently, eHealth devices can improve treatment and prevention.

For instance, it has been shown that a system of internet monitoring can reduce the admissions of heart failure patients with implantable defibrillators in emergency departments by 35%.¹⁰ eHealth can also help patients after their cardiac events. Smartphone applications can improve patient’s adherence to rehabilitation programmes¹¹ and thus help to improve quality of life and prevent future events.

New technologies can also be effective in managing CVD risk factors, including computer-based smoking cessation programmes¹² and telemetrically supervised self-monitoring of blood pressure.¹³

But other studies have questioned the medical effectiveness of eHealth suggesting that eHealth technologies deliver no significant results or very low benefits compared to usual care. Two studies, in Germany¹⁴ and in the USA¹⁵, concluded that telemonitoring for heart failure patients did not reduce mortality or hospitalisation.

⁸ Eurostat, Computer skills in the EU27 in figures, percentage of 16-74 years old population, March 2012, http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/4-26032012-AP/EN/4-26032012-AP-EN.PDF.

⁹ Inglis SC, Clark RA, McAlister FA, Ball J, Lewinter C, Cullington D, Stewart S, Cleland JGF. Structured telephone support or telemonitoring programmes for patients with chronic heart failure. Cochrane Database of Systematic Reviews 2010, Issue 8. Art. No.: CD007228. DOI: 10.1002/14651858.CD007228.pub2

¹⁰ Remote Monitoring Reduces Healthcare Utilization and Improves Quality of Care in Heart Failure Patients with Implantable Defibrillators: The EVOLVO (Evolution of Management Strategies of Heart Failure Patients with Implantable Defibrillators) Study, Landolina et al, May 2012, Circulation, doi: 10.1161/CIRCULATIONAHA.111.088971

¹¹ A mobile phone-based care model for outpatient cardiac rehabilitation: the care assessment platform (CAP), Waters et al, BMC Cardiovascular Disorders 2010, 10:5 doi:10.1186/1471-2261-10-5

¹² Myung S-K, McDonnell DD, Kazinets G, Seo HG, Moskowitz JM (2009) Effects of Web and computer-based smoking cessation programs: meta-analysis of randomized controlled trials. Arch Intern Med 169: 929–937. <http://www.ncbi.nlm.nih.gov/pubmed/19468084>.

¹³ A randomised controlled trial of the use of telemonitoring in the management of high blood pressure, McKinstry et al, International Journal of Integrated Care, 15 June 2012 - ISSN 1568-4156 URN:NBN:NL:UI:10-1-113058 / ijic2012-78.

¹⁴ Telemedical Interventional Monitoring in Heart Failure (TIM-HF), a randomized, controlled intervention trial investigating the impact of telemedicine on mortality in ambulatory patients with heart failure: study design, Koehler et al, 2010, <http://eurjhf.oxfordjournals.org/content/12/12/1354.full.pdf>.

¹⁵ Telemonitoring in Patients with Heart Failure, Chaundr et al, 2010, N Engl J Med 2010; 363:2301-2309 December 9, 2010

Economics of eHealth

Cost-effectiveness is a crucial factor when considering new health technology, not least in the middle of an economic crisis where cuts are made in healthcare budgets. It seems that the cost-effectiveness of eHealth has yet to be demonstrated.¹⁶

Conclusions and recommendations

EHN believes that eHealth solutions can offer added value to patients whilst also holding promises of benefits for healthcare budgets. EHN recommends that the use of eHealth applications is considered seriously by healthcare professionals and systems across Europe.

It is clear that there is a need for more work to be carried out to ensure effective and efficient use of eHealth tools. Work includes ensuring interoperability of services and a high level of data security. Computer illiteracy along with other technological challenges need to be addressed and health care professionals must receive proper training in communicating eHealth solutions to patients reassuring them that eHealth is for their benefit and not a cheaper alternative of lesser quality.

EHN emphasises that the fact that not all studies find that eHealth is an improvement over usual care should not prevent the use of eHealth. But, EHN recommends that critical eHealth interventions are well-documented and evaluated in terms of patients' satisfaction, effectiveness and cost-effectiveness.

¹⁶ Black AD, Car J, Pagliari C, Anandan C, Cresswell K, et al. (2011) The Impact of eHealth on the Quality and Safety of Health Care: A Systematic Overview. PLoS Med 8(1): e1000387. doi:10.1371/journal.pmed.1000387