

eHEALTH IN FINLAND: PRESENT STATUS AND FUTURE TRENDS

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eHealth: setting the scene

eHealth is a term meant to describe the use of emerging information technology to improve, or enable health and health-care. Over the last few years, it has gradually come to encompass earlier descriptions of information technology applications in medicine and health-care, such as telemedicine, telematics, telehealth and interactive health communications. In the context of this article, eHealth is to be understood as "... the use of information and communication technologies, in combination with computer networks, intended to promote health and support health-care service delivery and use beyond organisational boundaries" (1).

Finnish eHealth strategy

The necessary components for the development and implementation of eHealth are to be found in the Finnish national strategy regarding the application of information technology in health-care and welfare. The Ministry of Social Affairs and Health initiated this work around the mid-90s (1995-98), with subsequent reviews and updates during the period 2000- 2002 (2). Related, concomitant initiatives in the context of the Information Society actions have also originated from other departments of the government, such as the Ministries of Transport and Communication, Finance, Education and Defence (3).

Among the key targets of the Finnish health-care IT strategy is the improvement in information sharing and data flow, making reliable and accurate information easily and rapidly available at the time and place where it is needed for citizen and patient care.

In addition, the maintenance and development of professional skills are to receive increasing support, by offering the ability to update knowledge and expertise through online training sessions with remotely located experts, without the need to travel.

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Citizen empowerment and participation in the health-care process are also targets that specifically developed eHealth services are expected to promote. Virtual, online interactions of citizens and patients with the health-care system are envisioned to partially substitute and complement the traditional face-to-face model of health-care service delivery.

Compared to the targets set in the recent Action Plan for eHealth communicated by the European Commission in spring 2004 (COM/2004/356 Final) (4), Finland has defined as a first priority the development of tools for health professionals, that will enable sharing of distributed patient information in a secure way. Other eHealth targets set by the Commission, such as e-prescriptions, e-referrals and e-consultations, are already in use in Finland, or there are relevant national pilots under way. eHealth services for citizens will take the priority in the second phase of the Finnish eHealth implementation.

Implementation

The implementation of eHealth measures in Finland is realized simultaneously at the local/regional and national levels. At the regional level, local information systems are being integrated and linked to form regional networks that use common national services (e.g. security and link directory services). At the national level, common messaging standards and the basic structure of the Electronic Health Record (EHR) are being defined.

The provision of eHealth services is largely dependent on the presence of a suitable (i.e. secure, interoperable and technologically advanced) infrastructure. The development of a secure communication platform for eHealth, the definition of the necessary legislation and the architecture of the national eHealth info-way are being coordinated by the national EHR implementation project. Major enablers for eHealth, such as a PKI service for health professionals and service providers, and citizen identification tools (citizen smart card), are also implemented at the national level.

The introduction and implementation of eHealth applications will be done, in most cases, at the regional level by public service providers. In parallel, both private health-care organisations and the private non-profit sector are also offering eHealth services.

Financial aspects

The main source of funding for eHealth research and development in Finland is the central government, either directly through Ministries, or through other governmental bodies, national research institutes, foundations and agencies (e.g. the Finnish Academy of Science, the Finnish National Fund for Research and Development – SITRA and the National Technology Agency – TEKES).

For the period 2004 - 2007, the Ministry of Social Affairs and Health has earmarked the amount of 30 million euros per year for Information Society projects pertaining to eHealth. Of this sum, one-third will be distributed through county councils and the remaining sum directly by the Ministry, through annual calls for research and development projects. Additionally, there are funds available at the local level, through the Regional Hospital Districts' own development schemes for services and through local technology centres.

Regarding the reimbursement of eHealth services within the public sector, municipalities refund hospitals for e-consultation between primary and secondary care, on the basis of the "fee for service" principle. The local community pays for the services its citizens gain from the hospital district, but there is no national reimbursement scheme. In the private sector, the users pay for the service they receive and, in cases of remote physician consultations, they are entitled to social security reimbursement in the same manner as in face-to-face contact.

Current eHealth applications

With regard to eHealth applications, the primary emphasis has, so far, been on the digitalisation of patient-related documentation (e-referrals, e-care summaries, e-archiving). This process is closely connected to the introduction and standardisation of electronic patient and health records. Currently, EPRs are in use in 90% of primary health centres, as well as in approximately 30% of secondary care units. The effort to digitalise social care documentation is still in its early phases.

At the level of hospital care, a variety of systems are in use: departmental systems, like radiology information systems (RIS), pathology information systems, laboratory information systems (LIS); diagnostic systems, like decision support and knowledge-based systems and, finally, hospital management systems, like accounting, resource management and booking systems.

Regional health information systems deploy advanced health-care services at various levels of the health-care delivery system, including primary care, pre-hospital health emergency management and hospital care. These systems are networked and implemented using various technologies. A typical feature of these systems is the integration of existing legacy systems, imaging systems, and departmental and administrative systems into a single network and the development of new, innovative interfaces and applications to provide comprehensive services regionally.

Telemedicine systems are systems for teleconsultation and they are used to access an expert opinion or a second opinion, or to remotely monitor a patient at home, or in another health-care organisation. Often, these systems are especially intended to support delivery of medical expertise to rural areas.

Online information and knowledge services for professionals are becoming increasingly popular and the highly successful Best Practice guidelines (Evidence-Based Medicine guidelines) are now also delivered to users' mobile devices.

A variety of eHealth applications is also presently available to citizens and patients. These applications provide general health-related information, as well as personal advice on specific conditions. Additionally, they may provide possibilities for consultation services, or for buying pharmaceuticals, or other health-related products. These systems assist citizens and patients to be better informed on issues related to their health status and on the services that are available and accessible.

Home-care systems, disease management and fitness systems are also in use. Home-care systems are meant for monitoring chronic diseases at home, for the follow-up of elderly patients, or for tele-consultation of professionals from one's home. They are often based on wireless technology, such as mobile phones, handheld computers, or PDAs. Home-care systems are also used to help in the management of care, in preparing care plans and in the coordination of actions and tasks undertaken by members of care teams. Wellness and fitness systems are those meant for healthy people who want to monitor, maintain and improve their health status and fitness. Table I provides a sample of leading Finnish eHealth applications in a variety of domains.

Table I. eHealth applications in Finland.

Name	Application Description
HUS UUMA ¹	Regional health information network for access of distributed EHRs and images (PACS)
TelLappi ²	Telemedicine system, emphasis on large-scale regional distribution of medical images
Duodecim Terveysportti ³	Information and knowledge services for professionals - Best Practice Guidelines (EBM-based guidelines)
Päihdelinkki/ Addiction Link ⁴	Addiction information portal for alcohol consumption, drug abuse etc.
Apua.info ⁵	Early-stage counselling and crisis portal for use by citizens
Verkkolääkäri (NetDoctor) ⁶	Health question and answer (Q&A) service by specialists and other health-care professionals
Verkkohoitaja (NetNurse) ⁷	Regional system with Q&A service supported by nurses, online pharmacy and online bookings for primary and occupational health-care
Vernerit ⁸ and Papunet ⁹	Portal for people with development disabilities / Accessible communication for the speech-impaired
Virtuaalitulkki ¹⁰	Video-conferencing interpreter service to overcome language barriers in the context of education, welfare and health-care services
Nettineuvola ¹¹	Maternity and infant clinic online, information services and advice on child delivery and parenting
ProWellness ¹²	Diabetes management system for professionals and citizens
Atuline ¹³	Virtual hospital services

URL

¹ <http://uuma.hus.fi/>

² http://www.lshp.fi/tellappi/tellappi_engl.pdf

³ <http://www.terveysportti.fi/>

⁴ <http://www.paihdelinkki.fi/english/index.html>

⁵ <http://www.apua.info/englishindex.html>

⁶ <http://www.verkkoklinikka.fi/netdoctor/info.xsp>

⁷ <http://www.verkkohoitaja.fi/>

⁸ <http://www.verneri.net/yleis/index.php>

⁹ http://www.papunet.net/info_englanti.php

¹⁰ <http://www.tkukoulu.fi/koululaitos/virtuaalitulkki/>

¹¹ <http://www.nettineuvola.net/default.asp?julk=7>

¹² http://www.prowellness.com/pw/english/frontpage_en.htm

¹³ <http://atu1.atuline.com/base/infopage?idmen=52001>

Future trends

It is envisioned that, within the coming decade, health-care professionals will have fast and unhindered access both to the latest scientific knowledge (through access to medical databases and other, more sophisticated means of decision support) and to the data and information needed in routine health-care practice (health status of patient, insurance etc). Telemedicine applications will abound for consultations with other professionals and patients, as well as for continuous education.

Mobile tools will be increasingly adopted in all health-care settings.

Citizens and patients will have the opportunity to access their own medical data, as well as general health information and advice. They will be able to be better educated, particularly in the areas of disease prevention (in combination with the availability of knowledge on their genetic predisposition) and chronic disease management. Their interaction with the health-care system will be increasingly electronic, since there will be the possibility for online booking of appointments, e-prescribing and tele-consultation of one's own treating clinicians, or any other health-care expert. Home-care services and monitoring will become routinely available, particularly for the elderly and for people suffering from chronic conditions, or disabilities.

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3. Information Society Programme Finland http://www.tietoyhteiskuntaohjelma.fi/etusivu/en_GB/mainpage/
4. e-Health - making health-care better for European citizens: An action plan for a European e-Health Area, COM (2004) 356 final, April 30th 2004. Available at: http://europa.eu.int/information_society/doc/qualif/health/COM_2004_0356_F_EN_ACTE.pdf

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