Status of eHealth Deployment and National Laws in Finland

Jarmo Reponen [1,2], Ilkka Winblad [1] , Päivi Hämäläinen [3]

[1] FinnTelemedicum, University of Oulu, Finland;

[2] Raahe Hospital, Finland

[3] STAKES (National Research Centre for Welfare and Health), Finland

Abstract

This paper shows the results of surveys 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 surveys show the status and trends of the usage of eHealth applications in the Finnish health care in 2003 and 2005 and preliminary information of the situation in 2007. 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.

Keywords: eHealth, Electronic patient record, Telemedicine

Background

Finland is a sparsely populated country of 5.3 million inhabitants, who live in an area of 338,000 square kilometers.

According to a recent report by OECD on Finland [1] the Finnish health system performs well. Health spending is low-cost compared with the GDP (7.4% in 2004). The current challenges include: increasing the costs of hospital services and prescribed medicines; rising patient expectations; and a rapidly ageing population.

According to a census from year 2007, there are 229 primary health care centres in Finland. They are owned by municipalities. The staff consist of general practitioners, sometimes medical specialists, nurses, social workers, dentists, physiotherapists, psychologists. The number of inhabitants per health care centre doctor varies, averaging at 1500-2000.

Each municipality then belongs to a particular hospital district, containing a central hospital. Of the central hospitals, five are university hospitals that provide specialised tertiary levels of treatment. Each of the 21 hospital districts provides specialised hospital care for a population which varies between 70,000 and 1,300,000 inhabitants.

The private sector covers about 15% of health care, offering both basic and specialized services [2].

Objectives

The Finnish Ministry of Social Affairs and Health has regularly followed the eHealth development. The authors conducted a comprehensive survey on the implementation of information and communication technology (ICT) in 2003, 2005 and 2007 [3,4,5]. The purpose of the study presented here is to record what is the development stage before an introduction of a national electronic health record archive. The Finnish approach was to select an electronic patient record (EPR) as a backbone, which carries all other services [6]. There is also well-controlled use of a unique patient identifier. The latter part of this paper then describes the legal actions and development path.

Methods

The structured web-based questionnaire was distributed by e-mail to all public hospital districts and health care centres, and to a representative sampling of private health care providers. In this paper we present mainly the year 2005 data with some preliminary findings from year 2007 and use the year 2003 data as a comparison.

The questionnaire comprised of: questions about the adaptation of electronic patient records; applications to transfer/exchange patient information between organisations; methods of authentication, identification, and informed consent of patients; and the adaptation of different eServices for patients. The intensity of use told the amount (%) of the action or function being carried out by electronic means.

A full report with a detailed description of the method and the findings has been published in June 2006 in Finnish [4]. An English version was published in February 2007 [5]. The results have also been discussed in a textbook full paper [9] and congress proceedings [10].

The results of the current on-going survey update will be published in late 2008.

Results

Coverage

Responses to the questionnaire were obtained from all the hospital districts (100 %, n=21). In the public primary care, the answers were obtained from 71 % to 100 % of the health care centres depending on the question. In the private sector, the sample was only indicative.

Electronic Patient Record

In specialised health care EPR was in 2005 in use in all but one of the 21 hospital districts. Among the 17 of the 20 users of the EPR the intensity of use was over 90 %. Compared to the data from the 2003 survey, there was a fast progress in the intensity of use. The preliminary data from 2007 shows that all the hospital districts are now using EPR (100%).

In primary health care centres EPR was in 2005 utilized by 95,6 % of the health care centres. (93,6 % in 2003.) The preliminary data from 2007 shows that 99,6 % of primary health centres are now using EPR. The intensity of use was very high: Among 91 % of the EPR using health care centres, the rate was over 90 %.

Among the 28 responders of the private health care service providers, 89 %used EPR in 2005.

Picture Archiving and Communication Systems (PACS)

15 out of the 21 hospital districts had a PACS in production in 2005. (10 in 2003.) They were also practically filmless (over 90% of the medical images were utilized only in digital form). The preliminary information shows that all the 21 district had PACS in production in 2007.

In 2005, PACS or its components were in use in 53% of the primary health care centres.

eReferral and eDischarge letters

The eReferral letter signifies a course of action by which the referring physician draws up a message with an intention to transfer a patient and the responsibility of care to a hospital. The hospital then gives feedback through an electronic discharge letter. This service was in 2005 provided by 16 of the 21 hospital districts. In 2003 the service was available in about half of the hospital districts.

Electronic and Remote Consultations

Electronic consultation was provided by 11 of the 21 hospital districts, and it was at a testing or planning stage in the rest. The health care centres purchasing electronic consultations were very active with its use: among 70 % of the 49 health care centres which answered the question it was their principal mode for consultation.

Consultations by televideo conferencing between health care centres and hospitals have increased since 2003 and 10 hospital districts out of the 21 provided it regulary while five were in testing or piloting phase. Among 179 health care centres which answered to this question, 12 % purchased video conferencing in order to consult a specialist.

Regional Data Exchange Systems

There is no healthcare dedicated network in Finland. The demands of healthcare telecommunication are served through the use of commercial high speed data networks and virtual private network (VPN) tunnels. According to this survey, nine out of 21 hospital districts had a regional patient data repository in clinical use and six districts were running pilot projects

Teleradiology and Regional Image Distribution

The first experiments of teleradiology in Finland were made in 1969 and real implementation started at the beginning of the 1990's. In 1994 all the five university hospitals had teleradiology services [7].

The key information is that 18 out of 21 (86%) hospital districts utilised in 2005 some form of electronic distribution of radiological images either through a DICOM standard regional archive or via direct transmission.

Telelaboratory

Regional distribution of laboratory results is realized either through a joint regional archive or via direct transmission. The results showed that a total of 19 out of 21 (90%) hospital districts transmitted electronically laboratory results to the health care centres. (In 2003 when 10 out of 21).

Information Exchange Between Health Care Organisations and Patients

20 out of 21 hospital districts and 79 % of all the health care centres maintained their own websites. Information exchange with patients by SMS messaging was used by one and tested by three of the hospital districts. It was used by 5 % and tested by 6 % of the health care centres. Within private providers information exchange with patients by SMS was used by 11% and tested by 18% of those who answered.

Discussion

National Patient Information Archiving System and Citizen View

The Government has decided that the core of the Finnish ICT infrastructure for social and health care will reside in a national digital archive for patient documents (eArchive). The service will be maintained by the Social Insurance Institution (KELA). It will include a national public key infrastructure (PKI) system for health care professionals.

The legislation dealing with the creation of a national level IT infrastructure for health was accepted by parliament in December 2006 and finally come into effect in July 2007. The project is expected to be finished by the end of 2011.

All the public care providers must join in. Private care providers can choose between the national archive and paper archiving. The original legal archive copy will reside in the national archive, the institutions can have their everyday operational copies in their own patient record systems. The index to the document archive is a link

directory, which can be seen with an oral consent. Patients can refuse publishing of their records in the directory. Retrieval of actual data is only by strong authentication and electronically transmitted permission.

It has been planned that the National EPR Archive will offer citizens a chance to browse selected personal health information (eView). This will include reference information for the use of services, referral and discharge letters, certificates, statements and results of examinations, and access log data about the visits to the to the personal patient record.

National ePrescription

In Finland, a pilot-project for ePrescition was launched in 2002 [8]. The permanent national ePrescription legislation has been accepted in December 2006. A national e-Prescription database hosted by the Social Insurance Institution (KELA) will be created and strong authentication and a smart ID-card for professionals with an e-signature systems and SSL-secured messages from health care providers and pharmacies to the database will be used. The Finnish ePrescribing is aimed to be fully integrated with the different EPRs and a centralised receipt data depository, to cover all pharmacies, all using highly secured networks. The application to be built offers a platform for decision support for the drug safety. The legislation come into effect in April 2007 and piloting should start already in autumn 2008.

Conclusions

The present study is a part of a continuing survey, which follows the implementation of the Finnish national eHealth roadmap. The ideas are based on the European eHealth action plan. The ideas include citizen-centered and patient-centered services, the full continuum of care and well-informed patients.

In Finland all the hospital districts and nearly all primary health care centres used EPR as their primary tool for patient data in 2007. Regional exchange of information has been possible because of this high usage of EPR systems. With the patient's consent, the physician has an instant access to previous patient data from other institutions through a secure connection.

Because the backbone for electronic management of patient data is ready, the next major challenge is the construction and implementation of the national EPR archive. The goal is increased access to electronic (personal) health records, both by the physician and the patient.

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