

Initiatives in the Romanian eHealth Landscape

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Even if the foundation in the field of eHealth was set almost half century ago, the current achievements' status does not place Romania on a good position in a European ranking. The efforts made during the last years are promising, but they still cannot surpass the enormous gaps in many eHealth indicators. This is not a surprising fact because the eHealth level must be sustained by a healthy and stable sanitary system and infrastructure, which, in our country, is almost in collapse, especially now in the context of global economic and financial crisis. We consider being guilty for these circumstances the lack of a clear and solid mid-term strategy developed at the level of the Ministry of Health (MoH), harmonized in a global legal and regulatory framework as well, and also the non-correlated researcher groups interests. The good attitude of practitioners regarding the challenges of new technologies and the political will can still give a chance to the Romanian healthcare system and to its modern faces.

Keywords: eHealth, Telemedicine, Public Health Policies, EMR, EHR, eHealth Projects

1 Introduction

The traditional – almost fully paper-based – way of keeping medical records is far obsolete, but still used in countries with underdeveloped healthcare systems. This way, symbolically depicted in Figure 1, is the result of excessive bureaucracy, and encourages high costs, inefficiency, time wasting, confidentiality and control lacks. Doctors spend a lot of resources regarding the patient management such as scheduling, collecting and re-collecting patient data, or retrieving historical information, instead of focusing on patient's illness and treating it promptly. Also, the patient pays merely important resources before and during investigations for scheduling and/or inline waiting periods.

eHealth represents the use of emerging information and communications technology, that goes beyond common Internet applications, to improve or enable health and healthcare-oriented products, systems and services[4][20]. eHealth means better health as well as better ways of preventing illness through information technology and communications (ITC).

In such circumstances a modern – electronic

medical records (EMR) or better electronic health records (EHR) based – patient-doctor-health system approach is required. Such systems cannot be sustained only by physicians, no matter they belong to a private or a public healthcare unit. According to [6], 89% of the benefits resulting after implementing an EMR would go somewhere else. In order to meet citizens' health needs, authorities must be involved.

2 About the American eHealth progress status

In US just 4% from doctors use fully operative electronic systems and 13% [6] some basic ones, but only 10% in a proper way [1], despite the fact that in 2004 the president George W. Bush Jr. put the base of an ambitious plan that stated that in 10 years all American citizens should be able to benefit by eHealth services. There are several standards for EHR, like HL7 (Health Level Seven) CDA (Clinical Document Architecture), DICOM (Digital Imaging and Communications in Medicine) SR (Structured Reporting), IHE (Integrating the Healthcare Enterprise) RID (Retrieve Information for Dis-

play), IHE XDS (Cross-Enterprise Document Sharing), MML (Medical Markup Language) [3], ANSI X12 EDI (Electronic Data Interchange), ISO TC 215, etc., some of them being also in different versions. Even if or due to this, in America the main problem consists in the compatibility and interoperability of the existing EMR in truly EHR systems. At the end of 2009 there were more than 300 EMR vendors [10], each having more than one technical implementation. Also, generally being designed for different scopes, not all the standards cover the same and all aspects, like content, format, and communication. The Obama administration will invest \$20 billions in the next 5 years to achieve the goals set by the former government [6], standardization being one of them.



Fig. 1. Paper-based medical records keeping

3 ITC and health strategies in Europe

eEurope 2002 action plan mainly focused on Internet connectivity in Europe region. Then, eEurope 2005, approved in Seville in June 2002 by the European Council, had the goal to perfect the infrastructure resulted from the previous eEurope plan and to use it to grow the economic productivity and to stimulate the development of quality and accessibility of the services for all European citizens. The new network should have a secure infrastructure, assuring safe broadband transmissions to the highest number of people. There is also the general aim of providing a continuous, unlimited high speed Internet connection for everybody regardless of their age, health, social status or disabilities.

The eHealth field, one of the FP7 projects'

priorities, explains the use of these technologies in order to provide better and cheaper health services while reducing waiting times and human error.

From 2003 to 2008, The European Union (EU) spent over 50 million Euros annually to improve the collection of data, the exchange of information and to offer more information about primary and secondary prevention. One of the EU's missions is to identify potential threats to health, prevent diseases, and improve the existing union's health. On the other hand its countable efforts will be concretized in reducing morbidity and premature mortality and "activity-impairing disability" [19]. Also, the main public health directions of the European Commission's are: to contribute to decrease the incidence of major diseases in the EU; to support the development of more effective and efficient health systems; and to provide medical information and analysis to support these goals [12] [21].

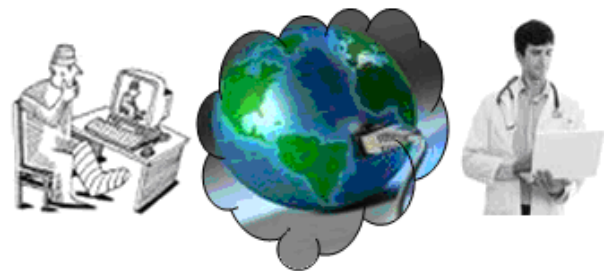


Fig. 2. eHealth approach

i2010 initiative – The Informational European Society in 2010 – under the motto "Better online than inline", states that EU governments provide their citizens online health services, including information on preventing illness, access to existing databases, teleconsultation and electronic refund of medical expenses, by using the infrastructure developed by eEurope 2002/5 action plans. EU paid efforts in developing "citizen-centred health systems" into an "European e-Health Area" framework. e-Health improves and facilitates access to healthcare systems and optimize the effectiveness and quality of the medical services [20]. EMRs are widespread in Europe, mainly due to the mentioned EU's strategies. Even if it surpasses the American system, the achievements related to this field

are in different stages of evolution for different European countries, or for different geo-political regions.

We will present few examples for countries that can represent a good reference point for a subfield of the modern healthcare. The German Health insurance companies have issued memory smart cards in 1995 to their customers replacing partially the old paper insurance forms. In 2003, the Federal MoH introduced a law to support the second-generation eHealth card (eGK) to correct the security, confidentiality, interoperability, and compatibility lacks of the previous one, and a 1.6 billion Euros IT project has been launched. In summer 2009 its implementation was started [15]. In May 2009, The Health Insurance Institute of Slovenia has released a new electronic health insurance card system across the country that covers both, public and private insurance organizations. Initially being used for insurance data, the eHealth card – based on an IBM integrated IT infrastructure solution – offers the basis to add future eHealth services, including e-prescriptions and EHRs [18]. This is the most revolutionary health card based solution because it covers in the same card public and private actors, and stores personal, healthcare, and insurance data. In January 2010 it became fully functional in the entire country. e-Prescription, just mentioned above, is a subfield of eHealth poor represented in the whole Europe, and only 3 EU countries – Denmark, Sweden and Netherlands – and Iceland can be said are using it for real, in proportion of 97%, 81%, 71%, and 18% [16]. Many countries are involved in large-scale and successful eHealth related research projects, since other ones are involved just in small or incoherent ones. The research amplexity in healthcare for a region must be the barometer of the entire public health system from that area. In the following section we make an overview on the healthcare system in a South-East European country in order to study if the enounced hypothesis is confirmed or not.

4 eHealth in Romania

It is told that Romanian eHealth researches started in the sixties. Around 1975 at the Centre for Health Computing and Statistics (CHCS) there have been consolidated some national databases and applications for restricted areas such physicians, hospitals, and patient registers for chronic diseases, and later biological and epidemiological records [5]. In 1990 the Romanian Society of Medical Informatics (SRIM) was founded. Shortly after, this was affiliated to the international organizations European Federation of Medical Informatics (EFMI) and the International Medical Informatics Association (IMIA) [5].

Between the years 1992-1994 and 1996-2000 the first phases of a Health Management Information System (HMIS) project was developed, using money from a World Bank loan and also from the state budget. The main beneficiaries were the MoH, the County Health Authorities and few pilot healthcare units. It represented a major rehabilitation of the health sector. HMIS was implemented in 1999 and linked in a public health network the health authorities from all districts. There were involved various network operating systems, X25 communication standard, and dial-up connections of district public health authorities and the Computing Centre of the MoH [5] [9] [14].

MoH used several software products as DSS or for documents management purposes (COMSHARE, TeamLinks). As a result of a pilot project the HEMATOS software is used in blood centres [9]. In the field of emergency services there were obtained several promising results, such as dispatcher for ambulances and radio links between regions and in-regions (e.g. REMSSy – Regional Emergency Medical Services System) [5][9][13].

After 2001 there were some eHealth/telemedicine interoperability projects based on medical research centers partnerships from Romania (TELMES) or between several countries. "Near to Needs" (with Italy), Health Optimum (with Italy, Spain, Denmark, Sweden, and Belgium), European Telecenters Networks for Integrated Medical Services (EUTELMES), and Funde-

ni Telemedicine Pilot Project are examples of such projects [2] [5] [11] [13].

Several partially commercial web sites have been designed for eHealth purpose, such <http://isv.ascti.ro>, <http://atlas.ici.ro/ehto>, <http://www.kappa.ro>, <http://www.ross.ro/EuroMed>, <http://atlas.ici.ro/ehto/sanatate>. As part of an eGovernment programme in 2002-2005 one important project was the Health Portal, developed in collaboration with Compaq and other software companies [5][9]. It provided statistics, legislation, healthcare services and units, emergency, news, information for citizens and authorities on health education and disease prevention, references, forum, links to other Internet connections, including the European Union public health portal, etc. [5]. There have been also developed projects for groups of citizens, like the ones with special needs. Information Center for Persons with Disabilities (InHand) project has been designed in order to develop IT-based environments for people with disabilities and older ones, to encourage them to participate in social and economic life, and to improve the quality of their life [9]. But their popularity was very poor.

In 2003, the Romanian Government has authorized the MoH to use the electronic system e-procurement of public acquisitions www.e-licitatie.ro [5]. The results appeared shortly, important savings in money being rewarded, but also new problems did arise.

Now is the moment that eHealth domain to embrace new forms in order to face the challenges, the needs or the current more sophisticated behavior of the possible patient, like mobile technology or card usage. Some pilot projects were focused on this aspect starting with 2004 [9]. Mainly, there are two types of cards recognized, the health card and the insurance card. The health card contains secured emergency data regarding the owner, like blood group and RH, pathology and treatment history for severe diseases, etc. [5]. According to [17], there are two card types – national and European – that may be used by Romanian citizens, both being a combination of the health and insurance cards mentioned

above. The national card is an electronic card containing significant identification data for the insured person, including also the contributions related records. It is valid only in Romania. The European one can be used by the Romanian citizens during less than 6 months travels in EU in order to cover or to reimburse the public medical services performed in foreign countries occasioned by the occurrence of an insured risk [17][5]. The cards have been theoretically introduced in 2007, but there are important gaps between the legal environment and the reality for the national card. The current intention of the Health Minister is finalizing the card system implementation till the beginning of the year 2012. Nowadays there is still a severe controversy regarding the storage of some personal EHRs into the digital identity card or passport. In 2007 it has been launched a pilot project, in which universities from Suceava, Bucharest, and Iași and a hospital from Bucharest, were involved into a partnership. Its name is “Integrated Information System for Patients Identification and Monitoring” (SIMOPAC), and one of its goals was the access to medical healthcare services using a medical card based on RFID (Radio Frequency Identification) technologies [24].

Probably the most important eHealth project in Romania is the Unique Integrated Information System of Social Health Insurances (SIUI) of Romania, realized by HP and SIVECO Romania, and funded by the social insurance system [8][5]. The main problem consists in using an alternative coding, not the DRG (Diagnosis Related Groups, a classification system used for medical investigations in healthcare units [7]) one, familiar now for operators. A compliance module is under construction [8].

Another important project was developed between 2005 and 2007. “Improvement of accountability and transparency in the allocation and use of healthcare resources through implementation of a computerized monitoring system for hospital morbidity and a hospital case based financing system” is based on the Australian AR-DRG version 5 classifications, and was funded by PHARE pro-

gramme. It is now operational in all Romanian public hospitals [5].

In 2007-2008 a new major program was released – even if the funding sources were the subject of controversies for a period of time – and its declared goal was to evaluate the health status of all Romanian citizens and to make free basic laboratory tests and examinations and more related ones if needed. 60% from the scheduled citizens responded positively to this call. The information collected during this program is very useful for chronic diseases identification and prevention purposes, health barometer, maps, and consistent policies development in the near future. The program had to be extended for 5 more years, but the political and economical circumstances were unfavorable.

Even if MoH adopted the Strategic Plan for 2008-2010 with ambitious promises regarding eHealth domain, the expected results consisting in developing integrated health services informational systems for patients monitoring are almost inexistent [5]. Romania is the subject of at least two 3 years FP7 eHealth projects released in 2008, being represented by the private software companies, Romsoft and Info World. The first project – DIAdvisor – with a budget of 9,284,061 EUR is coordinated by Novo Nordisk A/S (Denmark) and is a large scale-integrating project that develops a prediction based tool which uses past and easily available information to optimize the therapy of diabetes, free specific sensor technologies like standard strip sensing, minimally invasive continuous glucose sensors and non-invasive methods [22]. The other one is called REMINE, costs 7,728,249 Euros and is managed by GMD – Gesellschaft für Medizinische Datenverarbeitung GmbH. It assumes to support the early identification and effective prevention on Risks Against Patient (RAP) when there are significant mass of inhomogeneous data sources, stored in multimedia databases, and a distributed environments with different care professionals contemporary involved [23].

In the last years there were a lot of smaller eHealth related projects developed in part-

nership programs, or funded by NURC and Romanian Ministry of Education, Research and Innovation, but with local impact and/or eHealth sub-domain involvement. For example, only having partners from Cluj-Napoca, we mention two projects, like Patient Health Folder Development (DESP) and Integrated System for Medical Information Management Using HL7 Standard.

Our project aims to create and validate a new cardiovascular risk scoring including not only the classical factors, but also markers of the endothelial dysfunction, that can be used as a platform to create new policies of prevention, exposed in the virtual space. The financial limitations and incertitude may restrict the initial goals.

There are many other possible initiatives and projects with local or global impact for our eHealth strategies, but they can be even very recent, or without a large enough visibility, supported by papers published in known international libraries, like EBSCO or PROQUEST. These two sources were mainly used in this documentation.

5 eHealth in figures

In Romania the EHRs cover differently various stored data types by general practitioners (GPs), such 69% (91% in EU 27+2) for diagnoses, 63% (80%) for lab results, 58% (75%) for examinations, but only 25% (66%) for treatment outcomes, and 12% (35%) for radiological images [16].

Data used for Romania's Country Profile in late 2007, were collected by means of a survey of primary care physicians and their use of ICT with patients and between primary and secondary care and other health agencies. The survey – coordinated by the German IpsosMöln branch in cooperation with legitimate local partner institutes – was carried out in all 27 Member States (EU 27) of the EU and in Norway and Iceland (EU 27+2). According to [16], Romania ranked at the position of 27 considering the use of computers in GP practices, the last for the Internet and broadband connections, 24 for using computers in patient consultation. But, the GPs' general attitude towards ITC use in health-

care is very positive (4th place) [16].

6 Conclusions

eHealth represents a new stage in healthcare environment development, where all involved actors have benefits. This is the reason why in the last decade the authorities from the entire world paid significant efforts into setting its grounding and sustaining it. There were few major programs which set strong foundations in this domain for the European member states. Also, the current American administration followed and prioritized the previous eHealth initiatives. Even after this, the EU states have made averagely bigger steps than did the US. Despite the fact that the Americans are beneficiaries of high technologies, they also have severe lacks in interoperability issues and publiciz-

ing the new wave benefits for all GPs. Romania made some efforts in the last period, but is still far away from the most of the EU' countries. We consider that the incoherent and non-continuous strategies of the former MoHs and the synchronization problem between the R&D projects, caused sometimes by minor visibility, brought our country in this situation. Only the proved good attitude of the doctors towards modern practices in healthcare gives an optimistic perspective.

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