

Country Brief: Lithuania

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About the eHealth Strategies study

The eHealth Strategies study analyses policy development and planning, implementation measures as well as progress achieved with respect to national and regional eHealth solutions in EU and EEA Member States, with emphasis on barriers and enablers beyond technology. The focus is on infrastructure elements and selected solutions emphasised in the European eHealth Action Plan of 2004.

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Reviewer

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Executive summary

The main eHealth roadmap of Lithuania is entitled “Strategy of Lithuanian eHealth development for the years 2007-2015” (Lietuvos e. sveikatos 2007-2015 metų plėtros strategija). This policy document was adopted in October 2007 by the Minister of Health. It describes infrastructural, legal and financial issues as well as specific applications and standards. A newer version of this roadmap has since been adopted – “E. Health System Development Program for 2009 – 2015” (Lietuvos e.sveikatos 2009 – 2015 plėtros programa). The roadmap was followed by a dedicated implementation plan for the strategy (Lietuvos e. sveikatos 2007-2015 metų plėtros strategijos įgyvendinimo planas)¹. A valid edition of this plan was adopted in June 2010.

In order to consider Lithuania’s position regarding eHealth interoperability objectives the following eHealth applications have been examined: patient summaries and electronic health records, ePrescription, standards and telemedicine. In overview Lithuania’s situation is as follows:

The “Strategy of Lithuanian eHealth development”, specifies the need for a basic patient summary and electronic health record with a gradual development of the electronic health record, whereby more information is gradually included. The introduction of hospital information systems started in June 2008. Decisions on the functionalities and included data are expected to be made in 2010.

eTransmission of prescription to pharmacies is part of the Lithuanian eHealth strategy. There are plans to develop an information system with electronic prescription functionality by 2011.

With regard to standards the Lithuanian eHealth strategy defines three levels of interoperability, which have to be addressed: semantic, data and technology. In order to do this the strategy envisions the creation of new tool which will aid the exchange of standardised data. Lithuania is also a member of the International Health Terminology Standards Development Organisation (IHTSDO).

At present telemedicine in Lithuania is limited to teleconsultation and videoconferencing between health professionals. However, plans for telemedicine services to be expanded are included in the eHealth framework. In the past Lithuania has been involved in cross-border teleradiology pilots and the Telemedicine Centre of Kaunas University of Medicine also introduced some telemedicine services.

¹ Lietuvos Respublikos sveikatos apsaugos ministro [Lithuanian Minister of Health] 2007

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1 Introduction to the report

1.1 Motivation of the eHealth strategies study

Following the *Communication* of the European Commission (EC) on “eHealth – making healthcare better for European citizens: An action plan for a European eHealth Area”² Member States of the European Union (EU) have committed themselves to develop and issue national roadmaps – national strategies and plans for the deployment of eHealth applications addressing policy actions identified in the European eHealth Action Plan.

The *2004 eHealth Action Plan* required the Commission to *regularly monitor* the state of the art in deployment of eHealth, the progress made in agreeing on and updating national eHealth Roadmaps, and to facilitate the exchange of good practices. Furthermore, in December 2006 the EU Competitiveness Council agreed to launch the *Lead Market Initiative*³ as a new policy approach aiming at the creation of markets with high economic and social value, in which European companies could develop a globally leading role. Following this impetus, the Roadmap for implementation of the “eHealth Task Force Lead Market Initiative” also identified better coordination and exchange of good practices in eHealth as a way to reduce market fragmentation and lack of interoperability.⁴

On the more specific aspects of electronic health record (EHR) systems, the recent *EC Recommendation on cross-border interoperability of electronic health record systems*⁵ notes under “Monitoring and Evaluation”, that “in order to ensure monitoring and evaluation of cross-border interoperability of electronic health record systems, Member States should: consider the possibilities for setting up a monitoring observatory for interoperability of electronic health record systems in the Community to monitor, benchmark and assess progress on technical and semantic interoperability for successful implementation of electronic health record systems.” The present study certainly is a contribution to monitoring the progress made in establishing national/regional EHR systems in Member States. It also provides analytical information and support to current efforts by the European Large Scale Pilot (LSP) on cross-border Patient Summary and ePrescription services, the epSOS - European patients Smart Open Services - project.⁶ With the involvement of almost all Member States, its goal is to define and implement a European wide standard for such applications at the interface between national health systems.

Earlier, in line with the requirement to “regularly monitor the state of the art in deployment of eHealth”, the EC already funded a first project to map national eHealth strategies – the eHealth ERA “Towards the establishment of a European eHealth Research Area” (FP6 Coordination Action)⁷ - and a project on “Good eHealth: Study on the exchange of good

² European Commission 2004

³ European Commission 2007

⁴ European Communities 2007

⁵ European Commission 2008

⁶ European Patients Smart and Open Services (epSOS)

⁷ eHealth Priorities and Strategies in European Countries 2007

practices in eHealth⁸ mapping good practices in Europe - both of which provided valuable input to the present *eHealth Strategies* work and its reports. Member States' representatives and eHealth stakeholders, e.g. in the context of the *i2010 Subgroup on eHealth* and the annual European High Level eHealth Conferences have underlined the importance of this work and the need to maintain it updated to continue to benefit from it.

This country report on Lithuania summarises main findings and an assessment of progress made towards realising key objectives of the eHealth Action Plan. It presents lessons learned from the national eHealth programme, planning and implementation efforts and provides an outlook on future developments.

1.2 Survey methodology

After developing an overall conceptual approach and establishing a comprehensive analytical framework, national level information was collected through a long-standing Europe-wide network of national correspondents commanding an impressive experience in such work. In addition, a handbook containing definitions of key concepts was distributed among the correspondents to guarantee a certain consistency in reporting. For the report on Lithuania, Dr. Auste Kiskiene provided information on policy contexts and situations, policies and initiatives and examples for specific applications. She is working at the Internet Research and Innovation Institute⁹ (IRII), which is committed to research and promotion of social application of information and communication technologies, knowledge economy, intellectual property, innovation management and e-business, independently monitors and comments on internet and innovation developments in Lithuania and the Baltics.

The key tool to collect this information from the different national correspondents was an online survey template containing six main sections:

- A. National eHealth Strategy
- B. eHealth Implementations
- C. Legal and Regulatory Facilitators
- D. Administrative and Process Support
- E. Financing and Reimbursement Issues
- F. Evaluation

Under each section, specific questions were formulated and combined with free text fields and drop-down menus. The drop-down menus were designed to capture dates and stages of development (planning/implementation/routine operation). In addition, drop-down menus were designed to limit the number of possible answering options, for example with regard to specific telemedicine services or issues included in a strategy document.

Under Section B on eHealth Implementation questions regarding the following applications were formulated: existence and deployment of patient and healthcare

⁸ European Commission; Information Society and Media Directorate-General 2009

⁹ Internet Research and Innovation Institute

provider identifiers, eCards, Patient Summary, ePrescription, Standards as well as Telemonitoring and Telecare.

The data and information gathering followed a multi-stage approach. In order to create a baseline for the progress assessment, the empirica team filled in the questionnaire drawing data from earlier eHealth ERA reports, case studies, etc. to the extent meaningfully possible. In the next step, the project team experts and national correspondents filled in the template on recent developments in the healthcare sector of the corresponding country. These results were checked, further improved and validated.

Progress of eHealth Lithuania is illustrated in chapter 3 of this report, immediately in the thematic subsections. The illustrations are deliberately focused on key items on the progress timeline and cannot reflect all activity undertaken in, e.g. the development of ePrescription or the progress in policy documents.

This report was subjected to both an internal and external quality review process. Nevertheless, the document may not fully reflect the real situation and the analysis may not be exhaustive due to focusing on European policy priorities as well as due to limited resources, and the consequent need for preferentially describing certain activities over others. Also, the views of those who helped to collect, interpret and validate contents may have had an impact.

1.3 Outline

At the outset and as an introduction, the report provides in chapter 2 general background information on the Lithuanian healthcare system. It is concerned with the overall system setting, such as decision making bodies, healthcare service providers and health indicator data.

Chapter 3 presents the current situation of selected key eHealth developments based on detailed analyses of available documents and other information by national correspondents and data gathered by them through a well-structured online questionnaire. It touches on issues and challenges around eHealth policy activities, administrative and organisational structure, the deployment of selected eHealth applications, technical aspects of their implementation, legal and regulatory facilitators, financing and reimbursement issues, and finally evaluation results, plans, and activities

The report finishes with a short outlook.

2 Healthcare system setting

2.1 Country introduction¹⁰

The Republic of Lithuania is situated on the east Baltic coast. It is bordered by Belarus to the east, Latvia to the north, and Poland and the Russian Federation's Kaliningrad enclave to the south. The population is approximately 3.4 million and the surface area is 65 300 km². The capital, Vilnius, has a population of 555.613 and 68% of the population

¹⁰ eUser 2005

live in urban areas. Lithuanians account for 80.7% of the population. Lithuanian is the official language, although Russian is widely spoken. The population is mostly Roman Catholic. About 8.7% of the population are Russian, 7% are Polish and 1.6% are Belarusian.

After the restoration of its independence in 1989, Lithuania inherited a centralised system that mainly delivered inefficient healthcare management and resource allocation. It opted for restructuring and decentralisation as strategies that would increase the efficiency of health services. Decentralisation of the healthcare system was achieved by segregating primary healthcare (family physicians), secondary healthcare (physicians – specialists), and tertiary healthcare levels (high specialisation university clinics). The development and reformation of primary healthcare was seen as a key factor in the entire healthcare reform.¹¹

The current situation implies that the Lithuanian health system is faced with a number of basic challenges, which might constrain its capability to experiment with innovative, ICT-based health services. On the other hand, though, ICTs may also provide solutions that could help solve some of the long-term problems of the country's healthcare system.¹²

The box below summarises the key facts about the Lithuanian healthcare system:

Key facts about the Lithuanian healthcare system:¹³

Life expectancy at birth: 72.05 years (WHO 2008)

Healthcare Expenditure as % of GDP: 4.2% (WHO 2007)

Public sector healthcare expenditure as % of total healthcare expenditure: 67.3% (WHO 2005)

2.2 Healthcare governance¹⁴

Decision making bodies, responsibilities, sharing of power

The Ministry of Health is responsible for general supervision of the entire healthcare system. It is strongly involved in drafting legal acts and issuing the consequent regulation for the sector. There are 34 institutions, which are subordinate to the Ministry of Health, including 8 hospitals and clinics.

With the decline in scope of directly administered healthcare institutions, maintenance and development of tertiary healthcare became the focus of the administrative activities of the Ministry of Health. It now shares responsibility for running two major Lithuanian teaching hospitals with the State Vilnius University and the Kaunas Medical University.

¹¹ Jakušovaitė, Darulis et al. 2005

¹² eUser 2005

¹³ Data from World Health Organization 2000; Health Consumer Powerhouse 2008; World Health Organization 2009

¹⁴ Data actual as of July 2010

Furthermore, the ministry has an overall responsibility for the public health system's performance. It also develops a public healthcare infrastructure by establishing state programmes aiming at the achievement of key health targets and by making decisions together with Ministry of Economy and Ministry of Finance on major investment projects.¹⁵

Until July 2010, at the regional level each of the ten counties had a county governor who was appointed by the Lithuanian Government and was responsible for implementation of state policy in a number of spheres including healthcare. The healthcare function was carried out by the post of County Physician. Some healthcare providers (county hospitals, specialised healthcare facilities) were governed by the county administration. Decision-making in this network of providers required participation of the Ministry of Health. The counties were in charge of enforcement of the state health programmes in their respective regions. From July 2010, under the reform of counties, the administrations of counties were eliminated, and the healthcare institutions previously governed by county administration became accountable to the Ministry of Health or the municipalities.

The municipalities are responsible for providing primary healthcare to their local populations. They have been granted property rights for outpatient facilities and nursing homes. Municipalities are engaged in running small and medium sized hospitals within their localities, in accordance with legislation which has delegated this function to them. A decentralisation process defining the healthcare facilities' subordination to the county or municipality was launched three years ago. This has not yet been completed, as there are still discussions on who (counties or municipalities) should be responsible for medium-sized hospitals, and how administrative responsibilities should be allocated between the different levels. The position of Municipality Physician has been established with supervisory and decision-making authority in the field of primary healthcare. Moreover, municipalities have a wide range of responsibilities in the implementation of local health programmes and improvement of public health activities.¹⁶

Healthcare service providers

Primary healthcare in Lithuania is provided in 452 state and 1284 private institutions. State institutions may be centres, general practitioners' offices, ambulatory clinics and polyclinics – general or specialised. Ambulatory clinics are usually in the smaller towns, while polyclinics are situated in bigger cities, providing more complex services such as outpatient surgery. Paramedical centres (medical posts) and health posts (community nurse) in schools also provide primary care in rural areas.

Half of the Lithuanian hospitals are general hospitals, and they have 67% of the country's hospital beds. There are also 36 specialised, three rehabilitation hospitals and 33 sanatoriums. Until July 2010, the Ministry of Health managed 13 of these national healthcare facilities directly. At the regional level, the county administrations governed some hospital and specialised care, with Ministry involvement. Municipalities often ran small or midsized hospitals.¹⁷

¹⁵ European Observatory on Health Care Systems 2000

¹⁶ see above

¹⁷ Arnaudova and Charpak 2004, p.96-97

Family healthcare is based on the institution of a family physician. This position in Lithuania has been introduced taking into account the experience of other countries. Family physicians should maintain not only direct care activities like diagnosing and treating patients, but also target the health preservation and disease prevention functions. A family physician plays the role of a counsellor or a coordinator guiding through the health system, offering the consultation on elementary health issues, monitoring the occurrence of chronic diseases and making the referrals for necessary specialist consultations. Licensed family physician takes care of the inhabitants registered at the primary healthcare facility (out-patient clinics, family doctor centres).

Figure 1 below summarises the Lithuanian primary healthcare organisation.

Figure 1: Important features of primary healthcare organisation in Lithuania

Political/administrative unit responsible for primary healthcare	Executive institutions of municipalities are responsible for primary healthcare in Lithuania. Second and third level healthcare (ambulatory and hospital treatment services) is provided by healthcare institutions subordinate to municipalities and Ministry of Health.
Consumer Choice	According to the law all persons can freely choose any primary healthcare institution and GP. A patient can change GPs without payment after six months (some exceptions for students).
Financing	Financing of public healthcare is mainly tax-based.
Public or private providers	GPs are mainly publicly employed primary care providers. There are also private GP practices, which have contracts with State Patients' Fund and receive compensation for primary healthcare services. There can be completely private practitioners, who get paid by patients.
Gatekeeping function of the GP	A GP is the first contact point for patients (he/she performs gatekeeping function). Of course, patients always can access private practitioners including specialists without visiting GP.
Integrating health: initiatives for coordination	There is an ongoing reform to form more rational healthcare infrastructure: district hospitals shall treat common conditions, national hospitals - difficult conditions; there are plans to diminish the number of healthcare institutions by integrating small institutions.

2.3 Recent reforms and priorities of health system/public health

Currently ongoing reforms in the health and social care systems

The overarching goal of reform and restructuring in all the Baltic countries – also in Lithuania – is to provide cost-efficient and high quality healthcare services. This is planned to be achieved by strengthening primary healthcare, reducing hospital capacity and reforming finance.

In January 2003 the Ministry of Health presented a project for the strategic restructuring of healthcare institutions to the government. The project identified three main directions for restructuring:

- Further development of outpatient services, with emphasis on primary healthcare;
- Optimisation of in patient service and the development of alternative forms of activity;
- Development of medical nursing and long-term care services, with emphasis on services for the elderly.¹⁸

Short term priorities involve the reduction of waiting lines for health services and higher medical salaries. The government aims at having at least 80 % health problems addressed at primary healthcare level. A patient should not wait longer than 3 days to get to a general practitioner for planned healthcare services; and not longer than 10 days for consultation at secondary level.¹⁹

Furthermore, the Health Economics Centre prepared a policy document within the project financed by the World Bank titled “Lithuanian eHealth Strategy and Program – year 2004-2010”. This Project is following the action lines below:

- Development of a resource management system (model): data on services actually rendered, data processing and analysis, medicine sales accounting, resource (human, financial etc.) planning, allocation and accounting on national and institutional level.
- eHealth priorities and development plan covering issues of telemedicine: clinical decision support, telecare, monitoring, patient health record, distance learning, rising patient awareness etc.
- Computerisation and networking of institutions (model): GP room, outpatient clinic, hospital IS. Emphasis on the improvement of service provision to the population in terms of quality, quantity and effectiveness.
- Public health monitoring IS according to the main EU activity areas.
- Integration of the healthcare registers and particular databases in the integral health IS.
- Formation of the infrastructure of the eHealth system: technical resources, data transmission infrastructure and data interchange standards, safety.
- To assist in elaborating the action plan (E-Health Program) (2003-2008) for the implementation of the National Strategy for e-Health, Information Management and Development of Technologies, ensure harmonisation with information interchange standards, and regulations to start up health record system.

¹⁸ Open Society Fund Lithuania 2002, p.87

¹⁹ Ministry of Economy 2006

- To assist in elaborating investment project based on priorities set up in the Strategy implementation action plan.²⁰

In October 2007 the Ministry of Health presented furthermore her eHealth-strategy for the period 2007-2015²¹ (see section 3.1.1 below).

On 22th February 2010, the E. Health System Development Program for 2009-2015 was approved by the Minister of Health²². The aim of the Program is to achieve the balance between existing and newly appearing information and communication technologies, national and global tendencies, healthcare needs in immediate and further future, in order to guarantee evolutionary development of Lithuania's e. Health system, by consistently improving the quality of healthcare services.

Further there is an ongoing process to form a more rational healthcare infrastructure. It is stated that "[d]istrict hospitals shall treat common conditions, national hospitals - difficult conditions; there are plans to diminish the number of healthcare institutions by integrating small institutions. Financing shall be diverted to the primary care services, diminishing the volume of hospital services".

2.4 ICT use among general practitioners

This section provides a brief overview of relevant ICT related infrastructure and services data. It draws on earlier studies commissioned by the EC, notably the Indicators eHealth Study. Although the results of this study date from 2007 and may therefore not reflect latest changes, a more recent pan-European survey is not available.

In 2007, in terms of infrastructure, 57% of the Lithuanian GP practices were using a computer, 52% of the practices had an Internet connection; broadband connections were used in 33% of GP practices.

In 2007, of all IT applications under observation, storage of patient data either for administrative or for medical purposes was done most often. Around 40% of Lithuanian GP practices stored administrative patient information and around a quarter of practices stored routinely at least some type of medical patient data. Computer use in consultation occurred only to a very low extent, with only 8% of GPs actually using their PC for consultation purposes. The use of Decision Support Systems (DSS) was not very common in Lithuania. DSS for either diagnosis or prescription purposes were used in 12% of Lithuanian GP practices.

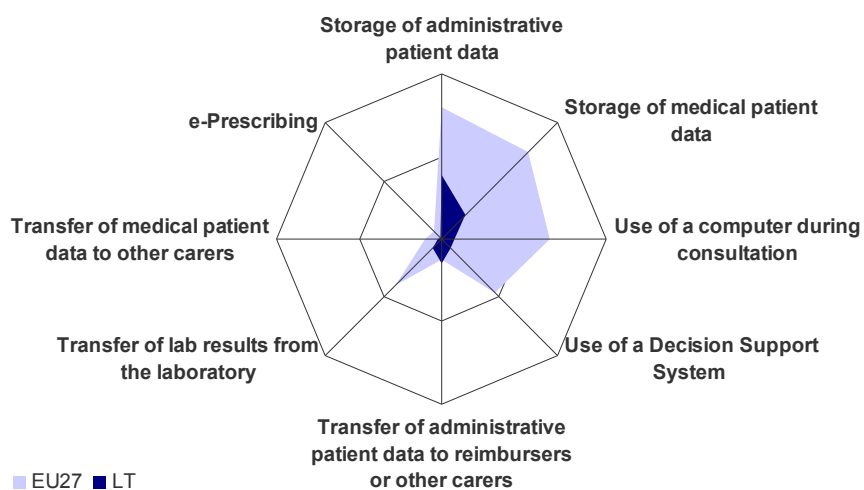
Electronic patient data transfer was very unequally developed among Lithuanian GPs. 10% of practitioners exchanged data with other carers and 21% with reimbursers.

In 2007 in Lithuania, only 1% of the interviewed practitioners reported the use of ePrescribing.

²⁰ (Health Economics Centre: Lithuanian e-Health Strategy and Program – year 2004-2010)

²¹ Lietuvos Respublikos sveikatos apsaugos ministro [Lithuanian Minister of Health] 2007

²² The Order of 22th February 2010 No. V-151 by the Minister of Health.

Figure 2²³: eHealth use by GPs in Lithuania in 2007

Indicators: Compound indicators of eHealth use (cf. annex for more information), % values. Source: empirica, Pilot on eHealth Indicators, 2007.

In 2009-2010, the situation was quite different. In 2009, all healthcare institutions with 10 or more employees were using the computer and the Internet in their daily activities. 38.3% of healthcare institutions had their websites publishing major information about institutions and their services; 8.7% of institutions were providing on-line consultations (by answering inquiries received by their websites), 8% offered online registration with a doctor. 31.4% of healthcare institutions' employees were using computer, 29%— were using the Internet at least once a week. 51.9% of healthcare institutions had LAN, 93.2% were using specialised software intended for healthcare institutions. The computerised devices were mostly used for administrative purposes (in 83.8% of all healthcare institutions), statistical, monitoring, accountability data provision needs (78.9% of institutions), registration of patients' visits (57.9 institutions), 74.7% of institutions indicated that they had used the information system of the State Patients' Fund under the Ministry of Health SVEIDRA. 65% of healthcare institutions used broadband Internet.²⁴

ICT use in hospitals

In 2008, after implementation of the project "E. Health Services" financed by the EU structural funds and implemented by the Ministry of Health together with partners, hospital information systems (HIS) were designed, installed and put into service in Kaunas Medical University Hospital, Klaipeda University Hospital and Vilnius University Hospital "Santariskiu klinikos". These systems enable hospitals to offer high quality

²³ The notion of „compound indicator“ designates an indicator build from a set of other indicators/survey questions regarding the same topic. The compound indicator reflects an average calculated from different values. (see Annex) The final results of the study on eHealth Indicators is available at www.ehealth-indicators.eu.

²⁴ Vilnius; Department of Statistics under the Government of of the Republic of Lithuania 2009

medical services for the patients and provide better healthcare administration, and the usage of computerised workplaces in these hospitals was increased significantly.

Another project financed by EU structural funds was implemented in 2008 by Vilnius University Hospital “Santariskiu klinikos”, together with 19 partners, which created patients’ pre-registration system. The flow of patients in the main institutions involved in the project includes 49 municipalities of Lithuania. After the project, national system of patients’ pre-registration for visiting specialist doctor is created, healthcare institutions are equipped with 580 new computerised workplaces, computer networks are upgraded, online help-desk is established.

40 healthcare institutions have implemented project aimed at the East and South-Lithuanian population morbidity and mortality from cardiovascular diseases reduction by the modernization and optimization of healthcare infrastructure and services. The project involved upgrading of medical equipment intended for diagnosis of these diseases and the introduction of information technologies enabling the institutions to exchange the medical diagnostic information.

3 eHealth strategies survey results

The following sections present the results of the eHealth strategies country survey. In a first section, the eHealth policy actions undertaken in Lithuania are presented. This is followed by a presentation of administrative and organisational measures taken. Section 3.3 presents results on key eHealth applications. Section 3.4 focuses on the technical side of eHealth, namely the role of patient and healthcare provider identifiers and the role of eCards. Legal and regulatory facilitators as well as financing and reimbursement issues are presented in the following chapters, 3.5 and 3.6. The report concludes with evaluation activities (3.7) in the country and an outlook (4.).

3.1 eHealth policy action

The eHealth strategies of EU and EEA countries are not always classified as strategies by the countries themselves. Some countries may indeed publish a policy document which refers to the ICT strategy in the healthcare sector. Other countries such as France and Germany have enshrined the central eHealth activities in legislation that governs the healthcare sector. In Germany, the relevant law is the law on the modernisation of healthcare; in France the introduction of an electronic medical record is included in a law concerning social security.

Sometimes documents from domains such as eGovernment strategies or Information Society strategies may contain provisions which concern eHealth. In cases where the healthcare system is decentralised, i.e. where power is delegated to the regional level, regional authorities may even publish strategy documents regarding eHealth.

3.1.1 Current strategy/roadmap

The main eHealth roadmap of Lithuania is entitled “Strategy of Lithuanian eHealth development for the years 2007-2015” (Lietuvos e. sveikatos 2007-2015 metų plėtros strategija). This policy document was adopted in October 2007 by the Minister of Health and is the first of its kind in Lithuania. It is concerned with infrastructural, legal and financial issues as well as specific applications and standards. A newer version of this policy document has since been adopted – “E. Health System Development Program for 2009 – 2015” (Lietuvos e.sveikatos 2009 – 2015 plėtros programa). As briefly mentioned above, the roadmap was followed by a dedicated implementation plan for the strategy (Lietuvos e. sveikatos 2007-2015 metų plėtros strategijos įgyvendinimo planas)²⁵. A valid edition of this plan was adopted in June 2010.

In detail, in this strategy document, the Ministry of Health presents how the European eHealth Action plan and the i2010 strategy will be implemented in Lithuania. The strategy should result in the development of a Lithuanian common, user-friendly information sphere for residents, patients, physicians and healthcare administrators.

The strategy describes three stages:

- [1] Within the first stage (until 2011) the main functions, support facilities and infrastructure of the National electronic health system (NEHS) will be prepared.
- [2] From 2011 till 2014, the second stage, the majority of the GPs institutions, primary healthcare institutions and other healthcare institutions are expected to use the EHR system and have access to the NEHS client services.
- [3] In the third and last stage, this is before 2016; the universal use of eHealth information tools by patients, GPs, primary healthcare institutions and hospitals is foreseen. This includes the use of IT solutions for complex research and diagnosis solutions and for the management of the healthcare system.

E. Health System Development Program for 2009 – 2015 defines context, means and measures for effective use of information improving populations’ health and healthcare. The goals of the program are the following:

- [1] to develop e. Health services for population and patients;
- [2] to develop e. Health services for specialists and institutions.

Under the program, the e. Health services and cooperation infrastructure is to be developed; this infrastructure is developed orienting it towards these goals:

- [1] to provide a uniform and convenient access to e- health services to the population: by providing a resident (patient) or the specialist in service single access to all patient’s health information; by improving accessibility of healthcare services, better plan and save time;
- [2] to facilitate cooperation between participants of the health sector: by ensuring that duplication of healthcare services is avoided duplication, using existing and relevant information about the patient; by ensuring that services of healthcare institutions and professionals are provided efficiently, using exchange of electronic health data about the patient; by allowing for more effective disease prevention and health promotion programs;

²⁵ Lietuvos Respublikos sveikatos apsaugos ministro [Lithuanian Minister of Health] 2007

[3] to reduce the costs of e health solutions implementation and operation, risks of the implementation failures and incompatibility: by creating a shared information technology and information systems components; by providing uniform access to shared information resources in the health sector

Currently a programme for the third stage of reform of healthcare institutions and services²⁶ has been approved by the Government of the Republic of Lithuania. During the second stage of this reform (2006-2008), patients were encouraged to choose private healthcare institutions, institution of family doctors was strengthened, particular services of primary care institutions were stimulated, the infrastructure of consulting clinics was improved, prices of primary care services were altered to encourage doctors to provide these services, etc.

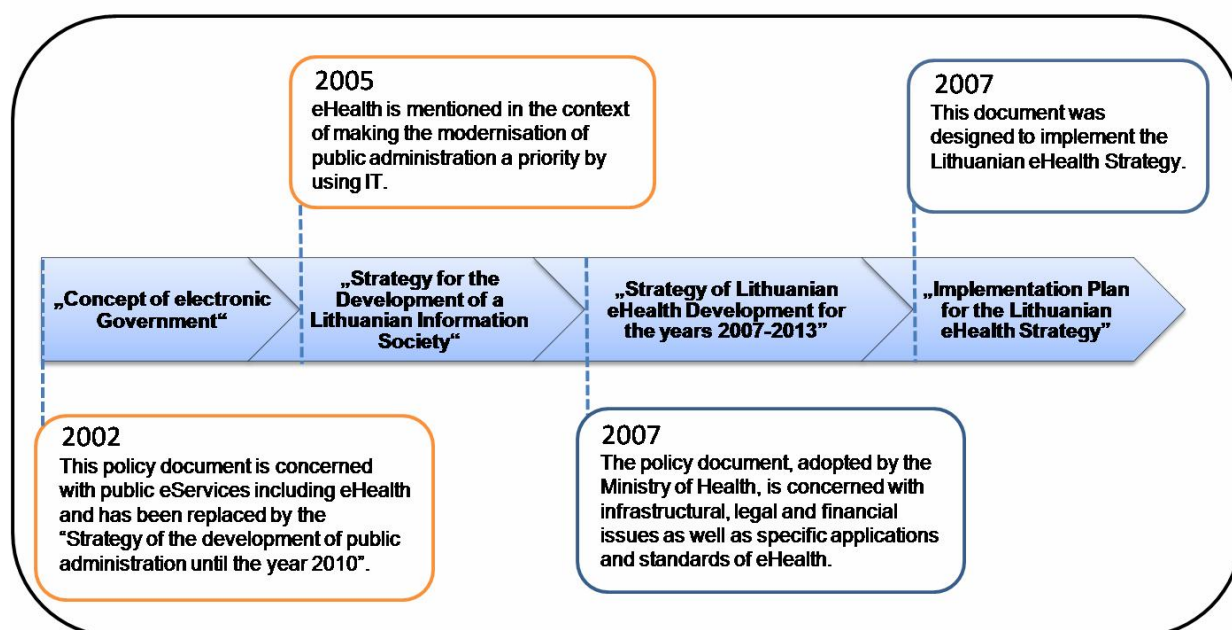
A former document related to eHealth is the “Strategy for the development of a Lithuanian Information Society” adopted by the Resolution No.625 of the Lithuanian Government on June 8, 2005. The development of eHealth is mentioned in the context of making the modernisation of public administration a priority by using IT. However, there are no details on an infrastructural, legal or financial framework, but evaluation issues are briefly mentioned in the context of all eServices. This refers to the evaluation of IT in public services according to their availability.

Furthermore, eHealth is also mentioned indirectly in the “Concept of electronic government” from 2002, which is concerned with all public eServices. This national policy document from the Lithuanian government is not in force anymore (since May 2009), as its main notions were transferred to the “Strategy of the development of public administration until the year 2010”. An Action plan for the transfer of public services into electronic space 2012 was adopted by the order of the Minister of Communications on June 14th 2010; it sets priority actions aimed at development of electronic public services in Lithuania. In this action plan, several measures are dedicated for development of e. health services.

Lithuanian local administrations of major cities (e.g. Vilnius) recently did some steps to implement eHealth projects since the national strategy for eHealth has been adopted. Orders to form work groups or implement public procurements can be found, but there are no legal acts or comprehensive policy documents.

²⁶ Lietuvos Respublikos Vyriausybė [Lithuanian Government] 2009

Figure 3: Lithuanian Policy documents related to eHealth



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3.2 Administrative and organisational structure

The Lithuanian eHealth Strategy is implemented by the following institutions:

Minister for Health has an overall responsibility in:

- establishing an eHealth Development Coordination Board;
- managing the national eHealth system;
- approving national eHealth system regulations;
- approving strategy implementation projects and investment projects funded by the state investments programmes.

eHealth Development Coordination Board:

- coordinates the preparation and implementation of the strategy and its action/implementation plan;
- advises the Minister for Health on the strategy and its implementation plan.
- assesses the compatibility of all eHealth related projects that apply for financial support from the state budget, EU support funds or other state funds to the national eHealth strategy as well as their feasibility and funding allocations.

Health Ministry Department is responsible for eHealth development and:

- monitors the eHealth strategy implementation process and advises the eHealth Development Coordination Board on necessary changes to be made in relation to the Strategy and its implementation plan.
- prepares and/or coordinates state eHealth investment programmes for strategy implementation, assesses these programmes from an economic, financial and technical point of view, and monitors their implementation;
- undertakes secretarial functions in the eHealth Development Coordination Board.

Information Society Development Committee under the Ministry of Communications:

- the Committee is responsible for overall coordination of the implementation of information society development strategy and policy of the Government, it also participates in coordination of actions related to e-health sector.
- approves and assigns financing to projects that are approved by the Ministry of Health and are set in the E-health programme implementation plan.
- Starting from July 2010, the Ministry of Communications has been playing a role in this area together with the Committee, as the Committee became directly responsible for this institution, and the Ministry participates in development, implementation and coordination of State's policy and strategy in the area of information society development.

National eHealth system manager:

- has an overall responsibility for the operation and development of the national eHealth system;
- provides methodological guidance in relation to the operation of the national eHealth system;
- implements national eHealth development projects.

In sum, these are all governmental departments plus a coordination council, which is an entity established and run by the Ministry of Health. In an only very limited way, there is also stakeholder representation in these official decision-making bodies.. Official Sources of financial support in Lithuania come from EU structural funds and co-financing. For period 2007-2013, more than 75 million Litas are allocated for development of national ehealth projects that are set in the E-health plan.

3.3 Deployment of eHealth applications

3.3.1 Patient summary and electronic health record (EHR)

In this study, the epSOS project's definition²⁷ of a patient summary was used as a general guideline. There a patient summary is defined as a minimum set of a patient's data which would provide a health professional with essential information needed in case of unexpected or unscheduled care (e.g. emergency, accident), but also in case of planned care (e.g. after a relocation, cross-organisational care path).

Lacking a standard definition, a patient's electronic health record (EHR) is here understood as an integrated or also interlinked (virtual) record of ALL his/her health-related data independent of when, where and by whom the data were recorded. In other words, it is an account of his diverse encounters with the health system as recorded in patient or medical records (EPR or EMR) maintained by various providers like GP, specialists, hospitals, laboratories, pharmacies etc. Such records may contain a patient summary as a subset. As of yet, fully-fledged EHR systems rarely exist, e.g. in regional health systems like Andalucia in Spain or Kronoberg in Sweden, or in HMOs (health maintenance organisations) like Kaiser Permanente in the USA.

²⁷ European Patients Smart and Open Services (epSOS)

It should be noted that in most policy documents reference is made simply to an "EHR" without any explanation of what is meant by it, thereby in reality even a single, basic electronic clinical record of a few recent health data may qualify. As a consequence, this section can only report on national activities connected to this wide variety of health-related records without being able to clearly pinpoint what (final) development stage is actually aimed for or has been reached so far.

Plans to implement basic patient summary

The action plan for eHealth, the "Strategy of Lithuanian eHealth development", specifies the objective to implement a basic patient summary (elektroninį sveikatos įrašą, ESI) as part of the National Electronic Health System (NESS). Further, in the document Lithuania eHealth 2009 – 2015 development programme Electronic Health History (elektroninė sveikatos istorija ESI) was presented which consists of Electronic Health Records (elektroniniai sveikatos įrašai ESI). By focussing on the patients' needs, the EHR aims to assure the lifelong and effective provision of healthcare services. The strategy foresees a gradual development. During the first years only critical patient health information will be included. Later it will be supplemented with more detailed medical data. By eventually including the EHR in the NESS the Lithuanian government aims to adhere the „one resident, one EHR“ principle.

The implementation of hospital information systems started in June 2008 in Kaunas University of Medicine Hospital and Vilnius University hospital²⁸. Currently one of the major problems are the uncoordinated actions of separate healthcare institutions already having invested in their own information systems.

There are Hospital information systems already in place in three big hospitals: Kaunas Medical University Clinics, Klaipėda University Hospital and in Vilnius University Hospital Santariskių klinikos. After agreeing to the conditions, patients can obtain information on their laboratory results, operation protocols, photos and other eClinical documents. In future patients would also be able to register for example their body temperature or blood pressure themselves.

Decisions on the functionalities and included data are expected to be made in the beginning of 2010.

3.3.2 ePrescription

Decision-support system and ePrescription as main features of eHealth

In the framework of this study and following work in epSOS²⁹, ePrescription is understood as the process of the electronic transfer of a prescription by a healthcare provider to a pharmacy for retrieval of the drug by the patient. In this strict sense, only few European countries can claim to have implemented a fully operational ePrescription service.

The plan to implement eTransmission of prescription to pharmacies is part of the Lithuanian eHealth strategy. There are also plans to develop an information system enabling patients, healthcare providers and pharmacies to use electronic prescription by 2011. Furthermore, a decision-support system and ePrescription in general are defined as main features of the eHealth application implementation.

²⁸ Ministry of Health of the Republic of Lithuania 9/7/2009

²⁹ European Patients Smart Open Services

Challenging is the fact that there are no information systems in use, which could deliver an infrastructure for any kind of eHealth application. Furthermore, the medication register is not entirely developed in Lithuania and a legal and organisational framework is still missing.

3.3.3 Standards

Standards are not only crucial to enable interoperable exchange of meaningful information in the healthcare system; they also ensure secure access to patient records by healthcare providers and citizens. This study aims to identify, among other usage, standards related to the domain of health informatics, such as the SNOMED Clinical Terms or the LOINC terminology.

Lithuania's representative to the International Health Terminology Standards Development Organisation (IHTSDO) is the National Centre of Pathology, which is subordinated to the Ministry of Health. The National Centre of Pathology is also the National Release Centre responsible for distribution of SNOMED CT in Lithuania, as well as translation of SNOMED CT into the Lithuanian language.

International standards, which are currently used in Lithuania, are listed below:

International Standards used in Lithuania

- HL7 v2
- HL7 v3
- Snomed CT
- ICD 9
- ICD 10
- IHE specifications
- EN/ISO 13606
- CEN TC 251
- DICOM

In general, "IT standardisation in Lithuania is one of biggest problems for Lithuanian IT companies: long term IT standardisation policy and plans, interoperability framework for IT systems (e-services) development and operation are lacking. Because of that, plenty of closed (proprietary) systems are developed and used, having low competition possibilities, and high development/usage cost"³⁰.

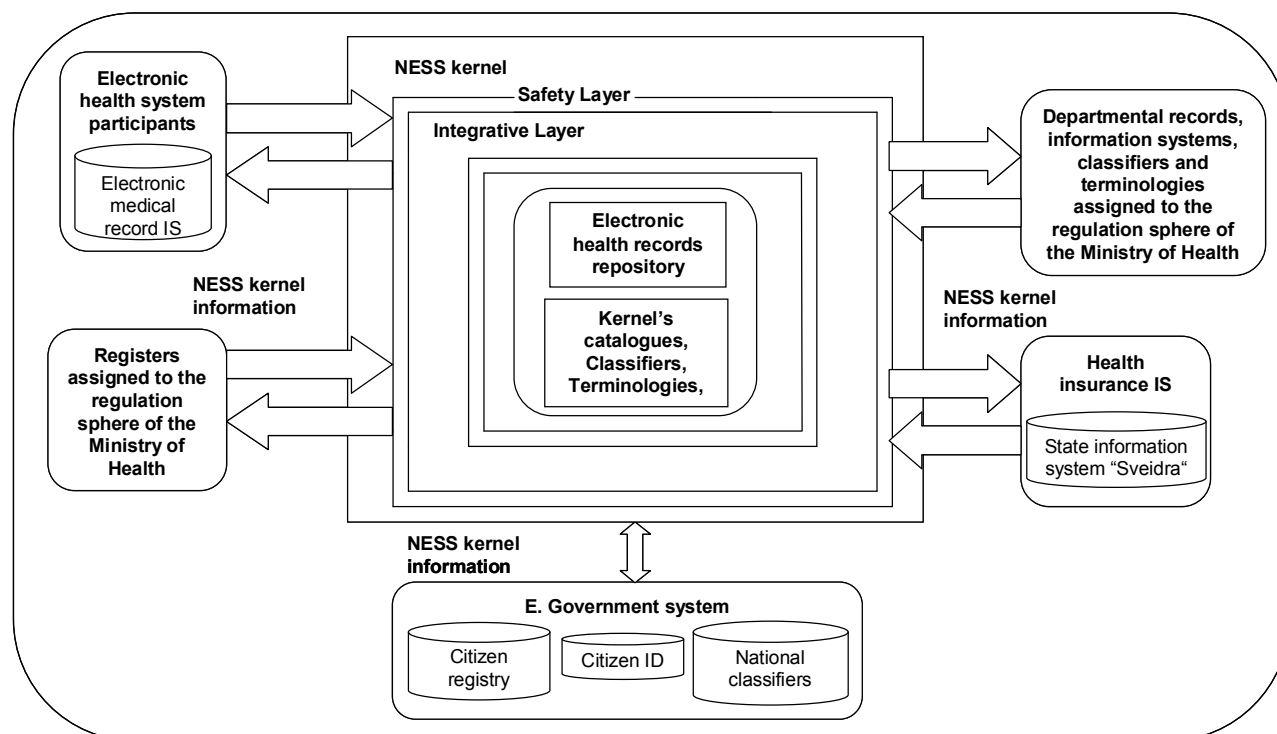
This implies that a single set of national eHealth standards is – at that time – missing and common standards and minimum data sets have still to be agreed upon. These standardisation problems increase the risk of misunderstanding of different actors in the eHealth system among each other. Therefore, the Lithuanian eHealth strategy defines three levels of interoperability, which have to be addressed: 1) semantic (e.g. terms, information models); 2) data (e.g. records, documents) and 3) technology (databases,

³⁰ Maskeliunas and Otas 2008

protocols). To solve the interoperability problems in all three fields, the strategy foresees the development of new tools in order to exchange standardised data between different information systems and a minimum data set.

The figure below shows an interoperability chart by the Ministry of Health for interaction within the National Health System:

Figure 4: Lithuanian interoperability Chart³¹



3.3.4 Telemedicine

The use of telemedicine applications is recognised as beneficial to enable access to care from a distance and to reduce the number of GP visits or even inpatient admissions. Commission services define telemedicine as "the delivery of healthcare services through the use of Information and Communication Technologies (ICT) in a situation where the actors are not at the same location"³². In its recent communication on telemedicine for the benefit of patients, healthcare systems and society, the Commission re-emphasises the value of this technology for health system efficiency and the improvement of healthcare delivery³³.

Teleconsultation and videoconferences are in use

So far, only teleconsultation or videoconferences between health professionals are in use. Further telemedicine services are planned to be developed as part of the whole eHealth framework.

³¹ Republic of Lithuania 2007

³² Europe's Information Society

³³ European Commission 2008

In the past, Lithuania was part of two cross-border projects in the field of teleradiology:

“The Baltic eHealth project³⁴ was conducted from 2004 to 2007 under Interreg IIIB program. During the project more than 200 hospitals from Denmark, Sweden, Norway, Estonia and Lithuania were connected into one dedicated secure IP-based network. Three hospitals from Denmark, Estonia and Lithuania used the network to establish the cross-border teleradiology service. X-ray images taken in Denmark were reported in Estonia and Lithuania. There were altogether 150 exams reported. In Baltic eHealth we established the cross-border teleradiology service between Denmark and Estonia as well as between Denmark and Lithuania by using a point-to-point connection between the institutions.

The R-Bay project³⁵ was a European eTEN market validation project. The project had eleven partners from eight European countries. The clinical partners came from Czech Republic, Denmark, Estonia, Finland, Lithuania and the Netherlands. R-Bay is an online eMarketplace, a consultation portal, for buying and selling of imaging related telemedicine services.”³⁶

Furthermore the Telemedicine Centre of Kaunas University of Medicine introduced telemedicine services. The Telemedicine Centre services include tele-consultations, second opinion services, distance education, image processing, information exchange and the creation of international databases³⁷.

3.4 Technical aspects of implementation

A key prerequisite for the establishment of an eHealth infrastructure is the ability to uniquely identify citizens/patients and healthcare professionals. This part of the survey deals with identifiers and how they are stored. This section does not deal with the tokens through which identification can or will take place. One such possibility would be via an eCard. This topic is dealt with in the following section. The current section focuses solely on whether or not unique identifiers are in place in Lithuania and for which purpose.

3.4.1 Unique identification of patients

Lithuania has a National Citizen ID and a Social Insurance Number, which are used for healthcare purposes since 2000. Moreover, an electronic patient identification is under development since 2008. This is connected to the legal act on “Approval of the interoperability scheme assigned to and maintained by the Lithuanian Ministry of Health and Information Systems”, which was adopted in 2007³⁸. This document defines the interaction between the healthcare systems and the state registries. It is aimed to create conditions for all the participants to the National Electronic Health System (NESS) to use

³⁴ Baltic eHealth

³⁵ R-Bay

³⁶ Rossa, Sepperb et al. 2010

³⁷ For more information, see: Telemedicine Centre of Kaunas University of Medicine , <http://tmc.kmu.lt/projects.htm>.

³⁸ Resolution No. V-836, 16 October 2007.

united registries and classifiers. It defines the main features of national patients' registry, which will help to identify patients at a national level.

Information authenticating natural personas is stored in the Residents' Register of the Republic of Lithuania. Every person registered is assigned a personal code which can only be used for specific purposes, including information management systems (in so far as provided by legal act).

SVEIDRA is the information management system of the public healthcare service. The system is used for the management, storing, exchanging and reporting of all the series provided by healthcare institutions. It is particularly important with regard to reimbursements.

3.4.2 Unique identification of healthcare professionals

In general, all healthcare professionals working in the Lithuanian healthcare sector are registered at the Lithuanian Health Ministry. Each professional (e.g. doctor, nurse, pharmacist) receives a national unique health services professional ID. There is also an electronic registry of the practice licenses of healthcare professionals, METAS, which is an integral part of the united system of health information registries and classifiers. This project is an initiative of the State Patients' Fund. The intention is to collect all information about the activities of healthcare professionals and their professional qualifications. It improves furthermore the communication between official institutes and healthcare professionals on the development of qualifications.

3.4.3 The role of eCards

Since March 2009 Lithuania introduced electronic citizens' ID cards – financed through state budget. The number of eID users is constantly increasing – in October 2010, more than 465 thousands of eID cards were issued, and till the end of the year 2010, this number is expected to reach 500 thousands. It is provided with a chip and connected to the following security mechanisms:

Security mechanisms on the Lithuanian eCard:

Identification of users

- All users must be uniquely identified
- Possibility to apply proper rights of access to data
- Possibility to apply personal liability

Authentication of users

- Passwords

Authorisation of users

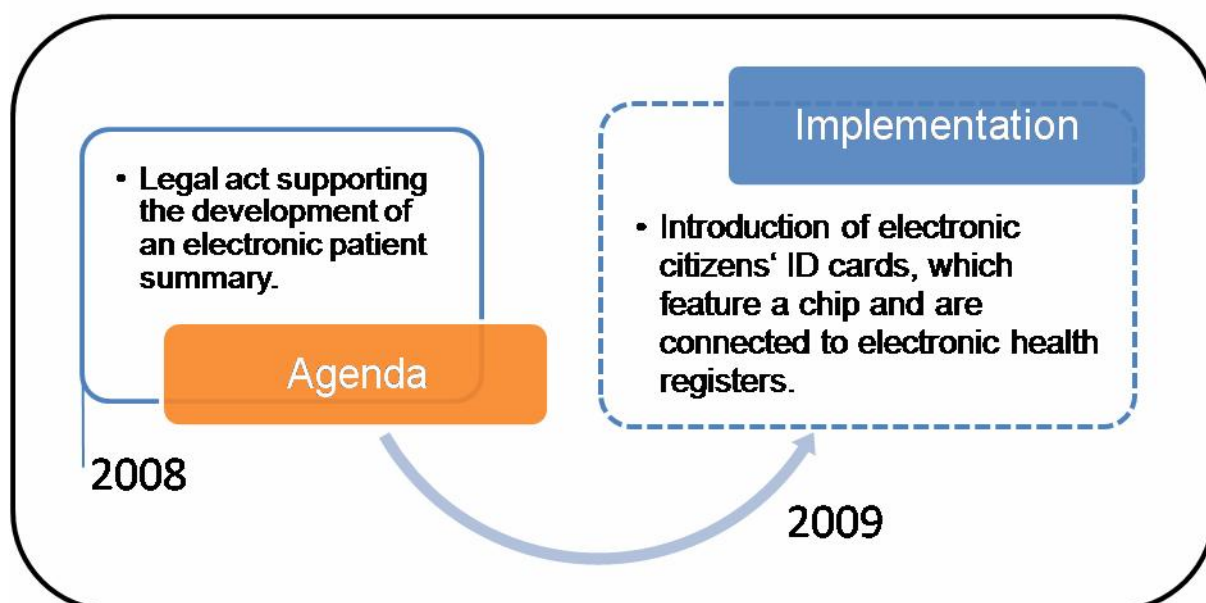
- Right of access: Just for persons who are in need due to the functions performed
- Just to the amount of data necessary to perform these functions

Remaining open questions concerning the newly introduced eCard are connected to security mechanisms on the one hand and data storage on the other hand. First, it has not been resolved yet, who has the right to see which data and how this process can be

fully protected. This issue is also related to the question, how different registers can interact and data can be transferred. The second remaining question is how it is dealt with data concerning HIV and psychiatric treatment.³⁹ A recurring challenge remains the financing of such a new electronic application, such as the eCard.

Apart from the eID, Lithuanian citizens are also provided with a paper social security card. This card can not be used for electronic identity management, but the social security number on the card is linked to the SVEIDRA database.

Figure 5: eCards in Lithuania



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3.5 Legal and regulatory facilitators

Legal and regulatory issues are among the most challenging aspects of eHealth: privacy and confidentiality, liability and data-protection all need to be addressed in order to make eHealth applications possible. Rarely does a country have a coherent set of laws specifically designed to address eHealth. Instead, the eHealth phenomenon has to be addressed within the existing laws on professional liability, data protection etc.

Continuous process of legislation

The process of developing a legal framework in Lithuania for eHealth is under way and currently under review related to legal acts for new provisions and identification of needs for new regulations. This is planned to be a continuous process throughout the entire Lithuanian eHealth Strategy implementation.

Several national legal regulations deal with the overall development of the information society in Lithuania. Many of them relate to eHealth, but very few envisage eHealth

³⁹ Skersyte 2009

specifically. No specific legal provisions on for example telemedicine or ePrescribing are issued.

The Law on Legal Protection of Personal Data⁴⁰ and several secondary normative legal acts establish detailed rules and obligations of the parties concerned. Important secondary normative legal acts are for example the Resolution of the Government of the Republic of Lithuania concerning the Reorganisation of the State Register of Personal Data Controllers and the Orders of the SDPI On Approval of the Rules on the Requirements for the Description of Data Protection Measures and Procedural Details. Generally both the Law on Legal Protection of Personal Data and the secondary legislative acts follow the Data Protection Directive 95/46EC. This is also the case for the criteria on the lawful processing of health data. Article 5(2) of the Law on Legal Protection of Personal Data prohibits the processing of health data except in case e.g.

- The data subject consents to the processing
- The processing is necessary for the protection of essential interests of the data subject
- The data have been made public by the data subject
- And the purposes as laid down by laws pertaining to healthcare.

Article 10(2) furthermore provides that personal data can be processed for scientific medical research.

The main legal acts which regulate the rights and duties of the patient in Lithuania is the Law on Patient's Rights and Compensation for Health Damages⁴¹ and the Civil Code. The healthcare providers' rights and duties too are regulated; this is in the Law on Medical Practice⁴².

The Law on Patient's Right and Compensation for Health Damages includes a) the right to information and b) the right to a medical record. The patient has first of all the right to information on his/her health, diagnosis, results of medical examinations, methods and prognosis of the treatment. The information must be provided in a form comprehensible to the patient and has to include explanations of special medical terms. When the information would however harm the patient or when the patient expresses his will not to know, exceptions are made. This information secondly needs to be included in the patient's medical record. The Law on Healthcare Institutions state that every patient's case history, nursing record or out-patient card has to be kept and managed at the institution. These documents are consequently property of the healthcare institution, but the patient must be provided with a copy when he/she so desires.

Specific regulations on Electronic Patient Records are however not included.

Other relevant legal acts include the following:

- Electronic Signature Law of 11 July 2000, amended on 26 June 2002;

⁴⁰ No. I-1374, 11 June 1996, as amended on 17 July 2000, on 21 January 2003, on 24 April 2004, and on 1 February 2008. Actual wording since 01/01/2009.

⁴¹ No I-1562, 3 October 1996 as last amended in 2005.

⁴² No IX-2148, 20 April 2004, as last amended in 2007.

- Law on Electronic Communications, 2004, amended on 1 September 2007, on 15 November 2008, on 1 January 2009 and on 15 March 2009. Actual wording since 15 March 2009;
- Law on the Services of Information Society of 25 May 2006.

In general, the Lithuanian e-commerce framework is currently based on the general norms of private law, consumer protection law, data protection law and the Lithuanian Parliament has passed a Law on the Services of Information Society.

3.6 Financing and reimbursement issues

Financing mainly provided by central government initiatives and EU Structural Funds

The eHealth infrastructure and applications are mainly financed by the central government and EU Structural Funds, as well as international programs and projects. Furthermore, local authorities and private investments also contribute to eHealth in Lithuania.

In general, the eHealth budget of the Lithuanian Health Ministry is used for e.g. consultancy services or the development of IT systems. Additionally, according to the National eHealth Strategy, eHealth research and development projects, national eHealth system administration and maintenance and supply of hardware and software for the healthcare providing institutions are funded from the state budget.

Requirements, which have been formulated concerning funding and spending, are listed below:

- From 2013 on, every healthcare providing institution has to allocate 2% of its annual income from the state health insurance fund to eHealth maintenance and development activities;
- All projects applying for state support for the development of information technologies are required to provide an organisational report on investments in the development of information technologies and their maintenance over the last 5 years;
- Healthcare providers that have received or are applying for state support for the development of information technologies are required to allocate at least 0,2% a year of their annual income from the state health insurance fund between 2008 and 2012 (inclusive) and 2% from 2013 for maintenance and development;
- Reports have to be submitted to the Ministry of Health;
- State investment will be mainly provided to hardware and software products for the projects that are applying for EU Structural support.

EU Structural Support for the Lithuanian eHealth area in the financial period of 2007-2013 amounts for about 28 million euros (98 million Litass) and is divided into two major types: the implementation of national (approx 77 % of funds) and regional (approx 23 % of funds) projects, that focus on development of e.services and information systems necessary for their provision both at in-patient and out-patient healthcare institutions. The funding for national projects support projects that develop the national eHealth system solutions and funding for regional projects supports projects focusing on information systems for primary data administration at out-patient healthcare institutions.

The European support for national eHealth services projects is going to be allocated to projects which:

Support Requirements for EU Funding:**Funds are allocated to national e. health projects that are:**

...projects aimed at the development of e. health services and cooperation infrastructure;

...projects aimed at development of information systems in the hospitals of universities' and national level.

Funds are allocated to regional e. health projects that are:

... projects aimed at the development of information systems in regional and district healthcare institutions providing in-patient services;

... projects aimed to improvement of IT infrastructure and information systems in district healthcare institutions providing in-patient and out-patient services.

Funds are allocated to national e. health projects aimed at the development of e. health services and cooperation infrastructure, which:

... correspond to the aims and objectives of the eHealth program and are integral to the national eHealth system;

...are related to the provision of services to patients directly or via healthcare professionals, or increase of their accessibility or quality;

... foresees implementation of e. health functions that correspond to international standards;

... foresees guaranteeing and support of security level of health related information that correspond to international standards;

...does not exceed 50%

...reduce the digital divide in healthcare institutions;

...implement innovative solutions, especially related to clinical decision support systems;

... develops solutions and services that are relevant to all healthcare facilities or institutions;

... foresees possibility to reproduce developed solution or services to potential new users: the legal and organizational terms of access for an unlimited number of users - the Lithuanian health sector actors – are planned to be created;

...apply for support up to 6 million litas⁴³ (this does not apply for joint projects).

3.7 Evaluation results/plans/activities

From a public policy perspective, evaluation is a key activity in the policy-cycle. It provides insights into the success or failure of a policy or project and leads to new policy goals and new methods of implementation. The need for evaluation of eHealth policies

⁴³ The Lithuanian litas (ISO currency code LTL, symbolized as Lt; plural litai or litu) is the currency of Lithuania.

and projects has been stressed time and again by the EC, not least in order to further the spread of eHealth in the process of healthcare delivery.

In Lithuania, evaluation responsibility is assigned to – according to the National eHealth Strategy – the Department of Information Technologies of the Ministry of Health. Many evaluation activities are also undertaken by consultancy companies, which work on behalf of the Ministry.

Hereby, various consultancy reports, which evaluate the overall system, are purchased on a regular basis. The action plan of the Lithuanian eHealth Strategy also specifies evaluation activities using result indicators. These activities are planned to be concerned with technology/functionality analysis, acceptance/trust by physicians and by citizens or patients. All these evaluations and assessments are planned to take place in 2010, 2013 and 2015.

Further evaluations that have been conducted include:

- [1] A Feasibility Study on eHealth System Development in the Lithuanian Healthcare Sector from 2002⁴⁴;
- [2] Consulting services on assessment of health information needs and the needs for information systems/technological infrastructure at all healthcare delivery levels (2003)⁴⁵
- [3] Report on evaluation and recommendations on the current situation, tasks of applied e-health services and e-health standards (2009)⁴⁶

The first two studies were focused on the evaluation of existent IT infrastructure in healthcare sector and on forming proposals for the development of eHealth system in Lithuania, The latest evaluation and recommendations study (2009) evaluates current situation of eHealth development in Lithuania and proposes principles and methods how to make further development more effective. It states that there are problems in eHealth development, including lack of focus on the needs of end users of eHealth applications and lack of efforts to disseminate the results. There are proposed several principles, which shall be central to the development of eHealth initiatives in Lithuania, for example, incremental implementation, consistency, Service Oriented Architecture, etc. Also functional system of e Health services and cooperation infrastructure is proposed.

4 Outlook

Lithuania is in the middle of a far-reaching process of not only slowly developing an eHealth structure, but also transforming the National Health System in general. The most important issue addressed is the better quality of healthcare. Special attention is paid towards the development of infrastructural components by implementing information

⁴⁴ Lietuvos Respublikos sveikatos apsaugos ministerija [Lithuanian Ministry of Health] 2002

⁴⁵ Alna UAB 2003

⁴⁶ Ernst & Young 2009

systems, such as the electronic basic patient summary. Specialised institutions are in place and have to be coordinated as well as different existing registers e.g. in hospitals.

Challenges can be found in all areas of development and deployment, namely technical, financial and legal obstacles. It seems as for future developments, there will be a shift of challenges from the technical and legal side to more organisational responsibilities and financial issues.

5 List of abbreviations

DRG	Diagnosis Related Group
DSS	Decision Support Systems
EC	European Commission
EEA	European Economic Area
EHR	Electronic Health Record
EMR	Electronic Medical Record
EPR	Electronic Patient Record
epSOS	European patients Smart Open Services
ERA	European Research Area
ESI	Elektroninį Sveikatos įrašą [patient summary]
EU	European Union
GDP	Gross Domestic Product
GP	General Practitioner
HCP	Healthcare Provider
HIS	Hospital Information System
HL7	Health Level Seven International (authority on standards for interoperability)
HMO	Health Maintenance Organisation
HPC	Health Professional Card
ICT	Information and Communication Technology
ID	Identification (e.g. number, card or code)
IHTSDO	International Health Terminology Standards Development Organisation
LSP	Large Scale Pilot
NEHS	National Electronic Health System
OECD	Organisation for Economic Co-operation and Development
PHS	Personal Health System
R&D	Research and Development
SNOMED	Systematized Nomenclature of Medicine-Clinical Terms
SVEIDRA	Information Management System of the Lithuanian Public Healthcare Service
WHO	World Health Organization

6 Annex

6.1.1 Annex 1: Compound indicators of eHealth use by GPs

Compound indicator name	Component indicators	Computation
Overall eHealth use	<ul style="list-style-type: none"> - Electronic storage of individual medical patient data - Electronic storage of individual administrative patient data - Use of a computer during consultation with the patient - Use of a Decision Support System (DSS) - Transfer of lab results from the laboratory - Transfer of administrative patient data to reimbursers or other care providers - Transfer of medical patient data to other care providers or professionals - ePrescribing (transfer of prescription to pharmacy) 	Average of component indicators
Electronic storage of individual medical patient data	<ul style="list-style-type: none"> - A2a - Symptoms or the reasons for encounter - A2c - Medical history - A2c - Basic medical parameters such as allergies - A2d - Vital signs measurement - A2e - Diagnoses - A2f - Medications - A2g - Laboratory results - A2h - Ordered examinations and results - A2i - Radiological images - A2j - Treatment outcomes 	Average of component indicators
Electronic storage of individual administrative patient data	<ul style="list-style-type: none"> - A1 - electronic storage of individual administrative patient 	A1 value
Use of a computer during consultation with the patient	<ul style="list-style-type: none"> - B2 - Computer use during consultation 	B2 value
Use of a Decision Support System (DSS)	<ul style="list-style-type: none"> - B3a - Availability of DSS for diagnosis - B3b - Availability of DSS for prescribing 	Average of component indicators
Transfer of lab results from the laboratory	<ul style="list-style-type: none"> - D1e - Using electronic networks to transfer prescriptions electronically to dispensing pharmacists? 	D1e value
Transfer of administrative patient data to reimbursers or other care providers	<ul style="list-style-type: none"> - D1a - Using electronic networks to exchange of administrative data with other healthcare providers - D1b - Using electronic networks to exchange of administrative data with reimbursing organisations 	Average of component indicators
Transfer of medical patient data to other care providers or professionals	<ul style="list-style-type: none"> - D1c - Using electronic networks to exchange medical data with other health care providers and professionals 	D1c value
ePrescribing (transfer of prescription to pharmacy)	<ul style="list-style-type: none"> - D1d - Using electronic networks to transfer prescriptions electronically to dispensing pharmacist 	D1d value

Dobrev, Haesner et al. 2008

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