

Country Brief: Czech Republic

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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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Executive summary

The Czech Republic's current national eHealth strategy document was created in 2007 and introduced to a wider public in 2008 by the Interdepartmental Committee for eHealth. Issues of eHealth and the areas which are of most urgent national interest were presented. Preceding this was the document "The Ministry of Informatics and the development of the Information Society in the Czech Republic" (2005) which describes concrete projects and steps towards creating the legal environment for the Czech information society. Prior to this was the document "National Action Plan eEurope+ Czech Republic" which was published by Ministry of Informatics in 2002.

In order to consider the Czech Republic'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 the Czech Republic's situation is as follows:

The main development for electronic patient records is the IZIP EHR application, which was developed by IZP Inc. in 2003. Currently, the system is offered exclusively to insurees of the GHIC, which covers roughly 2/3 of the Czech population. At present the system is used by 10% of the population and over 1/3 of all healthcare institutions. The IZIP system is also intended for wide use in ambulance emergency services (EMS) in the Czech Republic and in 2006 a pilot project was run at the EMS facility in Hradec Králové.

An ePrescribing module¹ for the IZIP EHR system was developed in 2006 and planned for implementation in late 2009, however it has been put on hold due to governmental changes and legal issues will need to be clarified before implementation can go further.

For standards the Ministry of Health follows a strategy of training and advising rather than legally prescribing use. International standards are in use in the Czech Republic to some extent and membership of the International Health Terminology Standards Development Organisation (IHTSDO) is currently being considered.

Telemonitoring and Teleconsultation are the main varieties of Telemedicine projects currently underway in the Czech Republic as well as Teleconferences between healthcare professionals. One particular project has been developed by the insurance company of Interior Affairs of the Czech Republic whereby a portal was created with eCommunication functionality for General Practitioners (GPs).

¹ empirica 2005

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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 eHealth"⁸ 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 Czech Republic 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.

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

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 Czech Republic, Stanislava Bartova provided information on policy contexts and situations, policies and initiatives and examples of specific applications. She holds the position of Experienced Analyst within the healthcare team at the Czech based branch of global IT services provider Ness. Ness deals with system integration and Bartova analyses the needs of the healthcare sector, including state authorities, hospitals and insurance companies for which she drafts software and ICT solutions.

The key tool to collect this information from the 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. The overall purpose was to assure as much consistency as reasonably possible when comparing developments in different countries, in spite of the well-know disparity of European national and regional health system structures and services.

Under Section B on eHealth implementation, questions regarding the following applications were formulated: existence and deployment of patient and healthcare 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 those parts of the respective questions dealing with the state of affairs about 3 to 4 years ago, thereby drawing on data from earlier eHealth ERA reports, case studies, etc. to the extent meaningfully possible. In the next step, national correspondents respectively partners from the study team filled in the template on recent developments in the healthcare sector of the corresponding country. These results were checked, further improved and validated by independent experts whenever possible.

Progress of eHealth in the Czech Republic is described in chapter 3 of this report in the respective thematic subsections. The graphical illustrations presented there deliberately focus on key items on the progress timeline and cannot reflect all activities undertaken.

This report was subjected to both an internal and an 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 study 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.

1.2 Outline

At the outset and as an introduction, the report provides in chapter 2 general background information on the Czech 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 introduction⁹

The Czech Republic is a landlocked country situated in central Europe. It covers an area of approximately 78 867 km² and has a population of 10.33 million, the vast majority of whom are ethnic Czechs. The number of inhabitants decreased between 1994 and 2002, but has risen markedly since 2004. Economically, the country performed well after the Velvet Revolution in 1989 and has one of the most developed industrialised economies among the new European Union (EU) Member States. The Czech Republic is a parliamentary representative democracy and has been a member of the Organisation for Economic Co-operation and Development (OECD) since 1995, the North Atlantic Treaty Organization (NATO) since 1999 and the European Union (EU) since 2004.

⁹ This section is taken from: Bryndová, Pavloková et al. 2009

2.2 Healthcare governance

Decision making bodies, responsibilities, sharing of power¹⁰

The Czech Republic has a system of social health insurance based on compulsory membership in a health insurance fund, of which there were 10 as of early 2010. The funds are quasi-public, self-governing bodies that act as payers and purchasers of care. The system is financed primarily through mandatory, wage-based social health insurance contributions administered by the health insurance funds. Other sources of financing include general taxation and out-of-pocket payments. In 2007, statutory health insurance payments accounted for the largest share in the structure of total health expenditure (78.4 %), followed by out-of-pocket payments and private resources of finance (14.2 %), and taxes (7.4 %). The relative proportions of these components have remained roughly the same in recent years. Faster increase is only registered in private expenditure consisting mainly of expenses of households. Total expenditure on health increased from 2006 by CZK 15,723 million and amounted in absolute value to CZK 236,601 million in 2007. This total expenditure on health represents 6.7% of GDP in 2007.¹¹

The Ministry of Health's chief responsibilities include setting the healthcare policy agenda, supervising the health system and preparing health legislation. The Ministry also administers certain healthcare institutions and bodies, such as the public health network and the State Institute for Drug Control (SÚKL). The regional authorities and the health insurance funds play an important role in ensuring the accessibility of healthcare, the former by registering healthcare providers and the latter by contracting them. Eligible residents may freely choose their health insurance fund and healthcare providers. The health insurance funds must accept all applicants who have a legal basis for entitlement regardless of age or health status; risk selection is not permitted. Sick pay and other cash benefits are not covered by the health insurance funds, but are part of the social security system, which is administered by the Ministry of Labour and Social Affairs and financed through separate social security contributions. Patient empowerment has become increasingly important since 2005 and has been supported by a variety of initiatives.

A selection of Czech health system data is presented in the box below:

Key facts about the Czech healthcare system:¹²

Population: 10.262.06 (OECD 2008)

Life expectancy at birth: 77.1 years (OECD 2007)

Healthcare expenditure as % of GDP: 6.8% (OECD 2007)

Public sector healthcare expenditure as % of total healthcare expenditure:
85.2% (OECD 2007)

¹⁰ This section is taken from: Bryndová, Pavloková et al. 2009

¹¹ European Commission and DG INFSO & Media 2009

¹² Data from World Health Organization 2000; Health Consumer Powerhouse 2008; World Health Organization 2009

Healthcare service providers¹³

The Czech Republic has an extensive public health network responsible for a range of services, including epidemiological surveillance, immunization logistics, quality analyses for consumer and industrial products, and monitoring the impact of environmental factors on health status. Its main actors are the National Institute of Public Health, the Regional Public Health Authorities, and the Regional Institutes of Public Health.

Regulatory authority for primary care, which includes GPs, paediatricians, gynaecologists, dentists and pharmacists, is divided among the State, the regions, and the health insurance funds. Approximately 95% of primary care services are provided by physicians working in private practice, usually as solo practitioners. Patients register with a primary care physician of their choice, but can switch to a new one every three months without restriction. A referral to a specialist by a GP is not necessary, yet recommended. Secondary care services in the Czech Republic are offered mainly by private practice specialists, health centres, polyclinics, hospitals and specialised inpatient facilities.

After a variety of reforms in the 1990s, hospitals that formerly belonged to the State are now owned and managed by a range of actors, including government ministries, regions, private entities and churches. The state is responsible also for the university hospitals and specialised centres. About 10% of all hospital beds are provided by private facilities in Czech Republic. Hospitals contract provision of services with health insurance funds.

At the end of 2006, there were 191 hospitals in the Czech Republic. 19 hospitals are directly administered by MoH and 3 hospitals by other central organisations. There are 70 hospitals that are administered by the regions, cities or municipalities. The other 77 hospitals are either private or run by the church.¹⁴ The financing mechanism for hospitals is based on payment for the operating costs from the insurance funds and capital investments from state or regional levels. Outpatient specialists are mainly private.¹⁵ Almost all pharmacies in the Czech Republic are run as private enterprises, and at the time of writing there is a trend towards the establishment of pharmacy chains, especially in urban areas.

The SÚKL (State Institute for Drug Control) is responsible for pricing and reimbursement decisions related to registered pharmaceuticals. Pharmaceuticals are assessed based on their efficiency, safety, quality and cost-effectiveness. Other features of the regulatory framework are international price comparisons for setting maximum prices and a reference pricing system to establish reimbursement limits for pharmaceuticals. Furthermore, in 2006 a degressive mark-up system was introduced, setting lower mark-ups on higher ex factory prices.

¹³ This section is mostly taken from: Bryndová, Pavloková et al. 2009

¹⁴ European Commission and DG INFSO & Media 2009 ; Institute of Health Information and Statistics of the Czech Republic 2010

¹⁵ eHealth ERA 2007

Figure 1: Czech Policy Documents related to eHealth

Political/administrative unit responsible for primary healthcare	Ministry of Health, but through GHIC and regional government is controlling and cooperating on networking.
Consumer Choice	Free choice of GPs in the Czech Republic.
Financing	Mainly tax-based, but via insurance companies.
Public or private providers	GPs in private practices reimbursed by insurance companies.
Gatekeeping function of the GP	GPs have a gatekeeping function in the Czech Republic.

2.3 Recent reforms and priorities of health system/public health

Currently ongoing reforms in the health and social care systems¹⁶

Many of the recent reforms to the Czech health system have attempted to address the chronic financial instability that has marked the system since its inception in the early 1990s. Other recent reforms have focused on the issue of hospital ownership and management structures, or on improving purchaser-provider relationships, compliance with EU law and coordination between the systems of health and social care. The key challenge to health reform in the coming decades will be to keep high-quality care accessible to all inhabitants of the Czech Republic, while taking into account economic development, demographic ageing and the capacity of the SHI system. Future reforms will focus on codifying patient rights, clarifying the purchaser-provider relationship and refining the SHI system. As of 2009 the system for defining and rationing benefits is fragmented, ad hoc and unwieldy. One of the most important pieces of proposed legislation would provide a more explicit definition of SHI benefits and re-designate them as entitlements, thus increasing transparency and strengthening the legal rights of all relevant actors to enforce them.

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.¹⁷ 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.

¹⁶ This section is taken from: Bryndová, Pavloková et al. 2009, p.xviii-xix

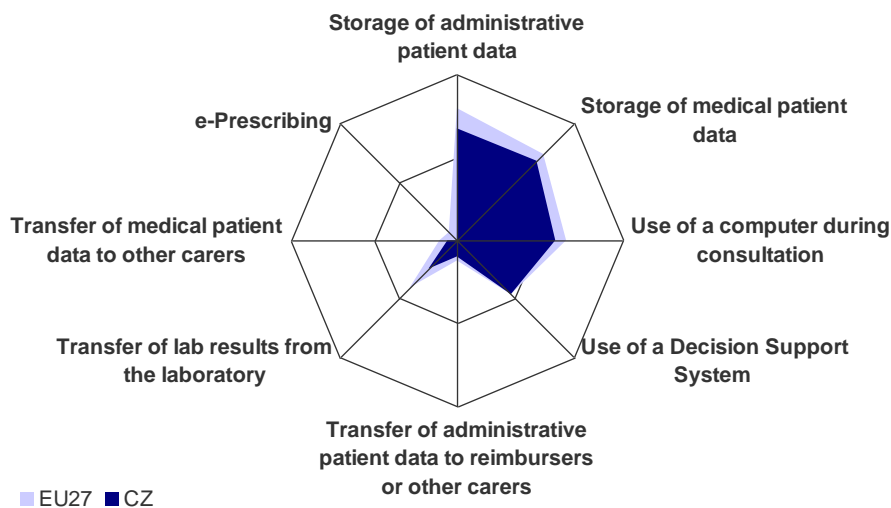
¹⁷ ICT and eHealth use among General Practitioners in Europe 2007

In terms of infrastructure, 82% of the Czech GP practices use a computer. 63% of the practices are connected to the internet. Around 40% of the Czech GP practices use a broad-band connection. The Czech Republic displays its best eHealth performance in the area of patient data storage, the use of a computer for consultation purposes and the use of a Decision Support System (DSS). DSSs are particularly well established in the Czech Republic. They are used for diagnosis or prescribing purposes in 72% of the Czech GP practices, a share that clearly exceeds the EU27 average of 62%.

Both administrative and medical data are stored in around 70% of Czech GP practices. The share of Czech practitioners storing the different types of individual medical patient data correspond more or less to the averages to be found in the EU27. This indicates that in the Czech Republic the electronic storage of patient data is only moderately common. Two thirds of the Czech GP practices use a computer in consultation with their patients.

The transfer of electronic individual patient data via the internet or dedicated networks is not yet well established in the Czech Republic. Electronic administrative patient data is routinely transferred to other carers by merely 6% of Czech GP practices, to reimbursers only by 13%. However while only 6% exchange medical data with other carers via networked connections, already one out of four practices receives laboratory results this way.

Figure 2¹⁸: eHealth use by GPs in the Czech Republic



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

¹⁸ 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.

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 England 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 labelled as such. 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 governing 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, also documents from domains such as eGovernment 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, there may even be strategy documents regarding eHealth from regional authorities.

3.1.1 Current strategy/roadmap

National eHealth Strategy 2008

The Czech Republic's current **national eHealth strategy** document was created in 2007 and introduced to a wider public in **2008** by the Interdepartmental Committee for eHealth that is responsible for the coordination of eHealth projects. The Committee's objectives and detailed strategy document introduces the issue of eHealth and defines which areas are of the most urgent national interest. The areas specified in the document are: electronic documentation, ePrescription, eID for insurees and healthcare professionals, electronic payments, national registries, data interface, classification systems of diseases, health technology assessment, systems of decision support, standards, clinical protocols, electronic data exchange among (including foreign) health insurance companies, internet portal for eHealth, health information portal for citizens including data about quality of provided care.

Ministry of Informatics and Information Society 2005

The document "**The Ministry of Informatics and the development of the Information Society in the Czech Republic**" (2005) designs the steps towards and the legal environment of the Czech information society. It also describes concrete projects such as a Government portal, through which it has been possible since July 2005 to register (and deregister) employees for health insurance.

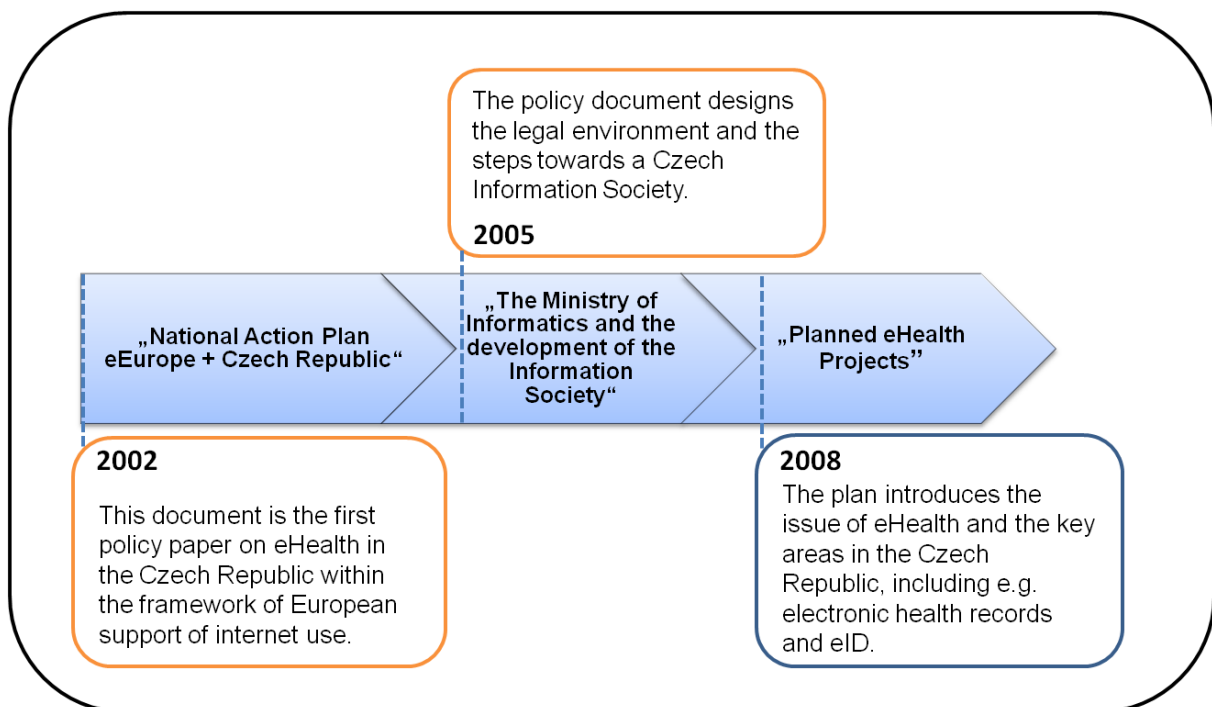
The document states that there will be services related to public healthcare provided by 2006. However, the plans for these services have been stalled due to various issues

**Ministry of
Informatics
Action Plan
eEurope 2002**

including the dissolution of the Ministry of Informatics, bureaucratic intervention and the emphasis on maintaining and modifying the current system rather than investing in new solutions. Despite these issues plans for ePrescription and the update of some registries are still going ahead.

The first Czech government document with regard to eHealth topics had been published in 2002, when the Ministry of Informatics issued the “National Action Plan eEurope+ Czech Republic” which included a subsection on on-line Health (Zdravotnictvi on-line) under the third objective "The Support of Internet Use".

Figure 3: Czech Policy Documents related to eHealth



3.2 Administrative and organisational structure

While the **Ministry of Health**¹⁹ has the overall responsibility for healthcare policies and implementations, there are also some dedicated institutions for eHealth issues in particular.

Interdepartmental Committee for eHealth

The **Interdepartmental Committee for eHealth**, which is a board of experts across all related fields, was established by the Ministry of Health in October 2007. The Committee meets every quarter and has a detailed agenda (see attached) of activities to be discussed and with followed-up real actions. Unfortunately, the document does not specify any detailed dates or budgetary information regarding the implementation (list of projects to apply for funding from ESF - Integrated Operation Programme is attached).

National Forum for eHealth

In addition, the **National Forum for eHealth**²⁰ was founded in 2007. It is chaired by Milan Cabrnoch, who is Member of the European Parliament and also a member of the above mentioned Committee. The National Forum for eHealth was created as a space for discussing up-to-date topics in relation to any upcoming national eHealth solutions to be implemented. In 2009 it gained the ProRec centre status, and is as such associated to the group of European ProRec centres, founded to promote the widespread use of high quality electronic health record systems. It is an open platform which can be joined by all interested individuals and organisations

Kulaty Stul

Another activity which was started with the aim of fostering eHealth discussion was established by the Minister of Health on 11th June 2007. It was called Kulaty Stul (engl. roundtable) and promoted the issue as a high level topic²¹. This effort was the first one, which together with the eHealth Forum helped the eHealth topic to be assigned such high political priority. Kulaty stul finished its work by publishing a set of reports before the elections in spring 2010.

The newly elected government presented their goals for the new political season. These goals are very reforming contrary to previous governments in terms of declaration and further there is a clear tendency to establish a healthcare system based on real nominal prices, which encounter higher patient contributions. The new coalition also considers eHealth as a tool for higher transparency and healthcare system effectiveness, lowering corruption; a tool to better inform patients about healthcare utilization and their health improvement. These goals were formed in a coalition contract signed by political parties on 12th July, 2010 with binding date for all necessary legal changes by 1.1.2012.

The Minister himself expressed interest in not building eHealth projects on green land, but in supporting solutions for interoperability and data exchange from what is already implemented. From the targeted topics, besides changes in financing healthcare and insurance, ePrescription, electronic auctions, data exchange, eLearning for the healthcare professionals and system of education were mentioned.

Further main actors shaping the eHealth landscape are the state-controlled General Health Insurance Company (GHIC)²², which is the biggest of the 10 health insurance

¹⁹ Ministry of Health of the Czech Republic 2010

²⁰ Ehealth Forum 2010

²¹ Technical team of the Round table

²² VZP ČR 2003

companies in the Czech Republic and insures about 2/3 of all Czech citizens, and IZIP Inc.²³, a private company which developed the EHR system which is now widely available, but not mandatory, for the GHIC insurees.

²³ IZIP

3.3 Deployment of eHealth applications

3.3.1 Patient summary and electronic health record (EHR)

In this study, the epSOS project's definition 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.

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.

IZIP EHR system

A large part of Czech insurees have the opportunity to use the IZIP EHR application, developed by IZP Inc. in 2003. IZIP Inc. was founded by three medical doctors ortholaryngologist Pavel Hronek, paediatrician Milan Cabrnock²⁴, and the rehabilitation doctor Miroslav Ouzky who intended to launch a medical database of insured patients who consent to include their data into a public information network, accessible through the internet . The electronic health records in the medical database include relevant information about all the patients' contacts with healthcare services, from regular GP visits, dentist treatments, medication and lab tests, to surgery. Representatives of medical associations were included in the planning process in order to actually answer the needs of the users. As an evaluation by the eHealth Impact study²⁵ showed, the prize-winning system's²⁶ estimated benefits began to exceed the estimated running costs in 2005, its third full year of operation, and seven years after the start of planning. Currently, 20% of the population and over 1/3 of all healthcare institutions are participating. In September 2010 there were 2.1 million users and 13300 healthcare

²⁴ Milan Cabrnock has performed multiple functions in Czech politics and healthcare, see: <http://www.cabrnock.cz>

²⁵ empirica 2005

²⁶ In 2005, IZIP won an award as one of the top five projects in the world in eHealth at the World Summit of the Information Society (WSIS) in Tunisia. In the same year, IZIP was selected as one of the 12 EIPA (European Institute of Public Administration) best projects in the world. Impact report CR

providers involved²⁷. So far, the system is offered exclusively to insurees of the GHIC, which covers roughly 2/3 of the Czech population.

Creation of EHRs

The file is initially created when a patient visits a participating doctor, who then explains the system and offers registration. The patient fills out the application form and, by signing it, he or she gives IZIP Inc. the permission to use his or her personal data for setting up the EHR. The application forms are picked up by IZIP representatives and taken to the registration department at IZIP Inc. To avoid misuse of data, entry to the registration department is for authorised persons only. After processing, the ID numbers and password are sent to the client, the citizen, in separate envelopes. The citizen may then activate and access his or her health record via the internet, the Green Line²⁸ telephone service, or with the doctor's help during a visit. The citizens are the owners of their EHRs, and they can authorise other persons to view their data. Therefore, every medical facility, which has the patient's consent, may share the records describing the provided care. The citizen thus becomes an active element of the healthcare system.

Training and instructions

IZIP representatives train professionals in using the system's full potential. This includes the upload of new files, access to existing information, and advising citizens on the opportunities they have. Apart from the initial training on registration, professionals receive continuous support according to their requirements. Citizens do not receive direct one-to-one coaching, but are provided with written material as a part of the registration package. They can find further information online²⁹, or through the Green Line service, IZIP's telephone service centre.

Demo: <https://demo.izip.cz/auth/clientlogin/lang/en>

Records in the IZIP system contain:

- Anamnesis
- Results of examinations performed by a GP or specialist, in chronological order
- Medication
- Results of laboratory tests and examinations
- A list of prescribed and issued medicines and drugs
- X-ray scans and other images
- Reports on hospitalisations
- Vaccination history
- Information on other treatment, including type and location.

The internet health files consist of selected parts of the medical documentation. Only registered healthcare professionals are authorised to insert data and records into the IZIP system. In order to record data into IZIP, physicians use their ambulatory software or the information system in their office. Healthcare professionals write into the IZIP system

²⁷ Elektronicka Zdravotni Knizka

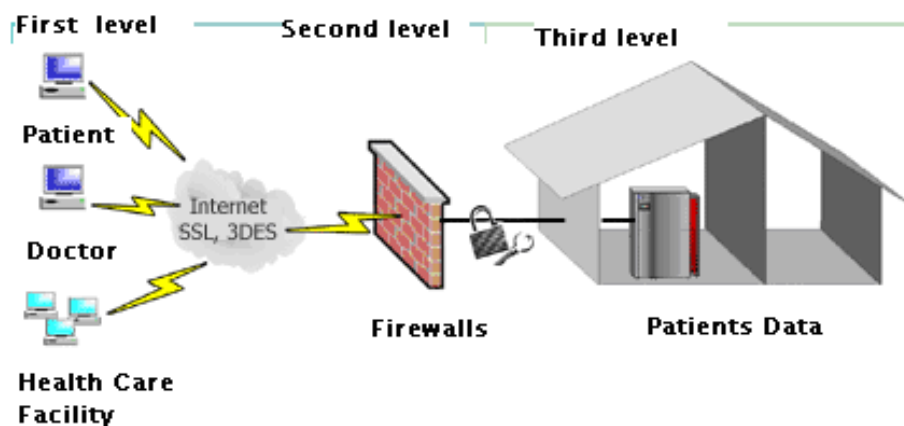
²⁸ The Green Line telephone service also deals with difficulties and clients' questions.

²⁹ Demo version in English: <https://demo.izip.cz/auth/chooselogin/lang/en>

through an interface, which allows for data transmission from emergency rooms, laboratories, complementary services, and pharmacies.

Data protection

The security of data is currently ensured by the password and PIN system. The empty record can be accessed using the four-digit PIN in combination with the unique personal ID number given at birth. Citizens can then introduce a personal password as an additional requirement for data access. Healthcare professionals have to register with the system and can log in using their own password and PIN, identifying them as professionals. They can view only the information they have been authorised to access by the patient.



IZIP uses advanced information security methods for safeguarding the data against loss, misuse or damage, based on the same platform as eBanking. Information security in the system is higher than the current medical data security in medical and other facilities. There are also security options for citizens. The IZIP system supports a chip card system, and the use of electronic signatures and certificates, to guarantee safe access to the health record by citizens. A trustworthy certification authority draws certificates after precise ID clarification.

At the beginning, citizens' data was administered with some software at the HPO, then copied into the citizen health record, and then sent to the IZIP server. The IT department has developed the IZIP system since then, and now most software applications used by HPOs allow exporting data to the IZIP server directly. For the cases where this is not yet possible, IZIP Inc. negotiates and cooperates with the software developers on compatibility with IZIP servers. The IZIP servers are stored in a special, detached building. A private subcontractor, providing complete physical and electronic security, and providing the conditions for servers' deposition, administers the building.

Every stakeholder, such as the patient, laboratory, doctor, pharmacy, etc., desiring to communicate with the servers need to be accepted by IZIGATE. IZIGATE is the application controlling formal adherence to data standards. As a second step, it is checked whether the person trying to access the system is registered. ID and password verification is required for this purpose. Only registered stakeholders are allowed to communicate with the server. This functionality is supported by IZICHECK. IZICHECK prevents manipulation by non-registered clients, as well as line overloading.

To prevent hackers from access to data sent by healthcare professionals, the data are encrypted by SSL 3.0 (Secure Sockets Layer version 3.0). The standard for data structuring is XML format. Data are decrypted in the security zone and particular data are saved on several computers. The computers are interconnected and in a chain process assure data security and data saving. Each computer provides different functions. If someone should try to break into the server building to steal the servers and to decipher the stored data, they would need decades and hundreds of computers to succeed.

Emergency services and eMessaging

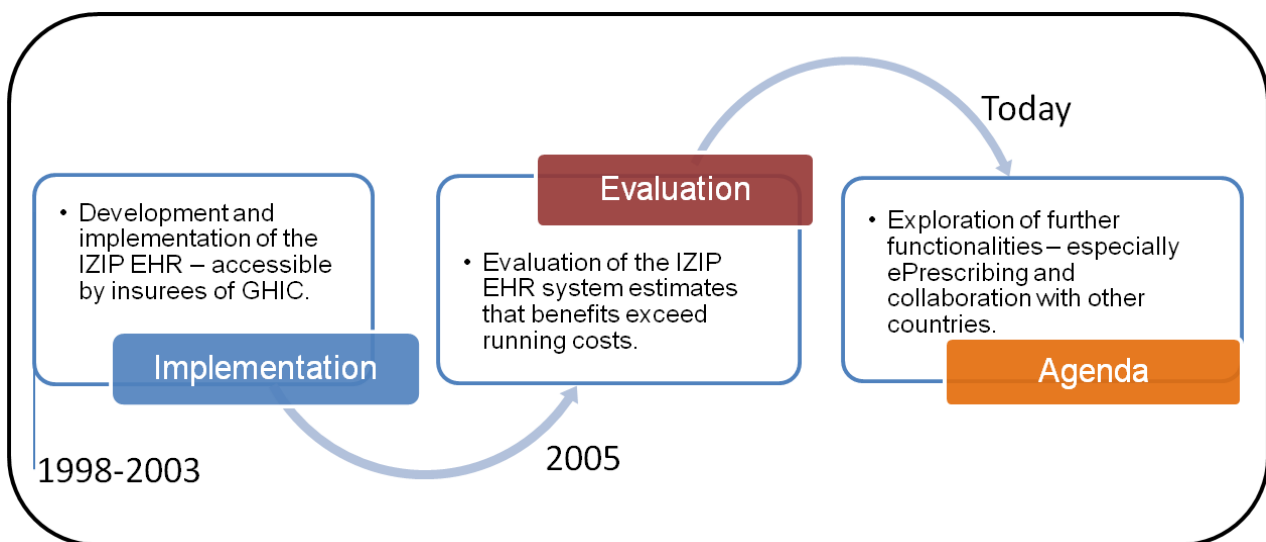
The IZIP system is also intended for wide use in ambulance emergency services (EMS) in the Czech Republic. By providing EMS paramedics with access to certain parts of a patient's record, first aid could be much more appropriate and timely. In 2006, a pilot project was run at the EMS facility in Hradec Králové. Another possible future functionality is a messaging service, on request by citizens for communication by email and SMS, using a cell phone operator's networks. Reminders could be sent for appointments, as well as test results, if citizens request the use of these media.

Data usage for public health purposes

In order to help health authorities to monitor public health developments and to adjust public health policy accordingly, it is also possible to evaluate anonymous online statistical data according to diagnosis, such as influenza epidemics, drugs prescription, or proposed procedures. IZIP Inc. plans to generate individual clinical and financial summaries for health institution managers, healthcare professionals, and citizens.

Further possible functionalities, especially ePrescribing and collaboration with other countries, is explored in the context of the epSOS project³⁰. The Czech Republic is one of 12 participating European member states, who work together to develop an eHealth framework and infrastructure in order to facilitate interoperable basic patient summaries and ePrescription among European countries.

Figure 4: Patient Summary in the Czech Republic



© empirica 2009

³⁰ European Patients Smart and Open Services (epSOS)

3.3.2 ePrescription

In the framework of this study and following work in epSOS³¹, 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.

An ePrescribing module³² for the IZIP EHR system was developed in 2006 and planned for implementation in late 2009, but it has been put on hold due to governmental changes. The intended features include a record of medical drugs sold over the counter in pharmacies as well as those dispensed at GP offices and hospitals, allowing doctors to monitor the medication mix and alert their patients in case of overdosing, adverse effects from a particular drug combination and other potential risks. It is also meant to save time for patients and doctors by avoiding visits to the practice in order to collect follow-up prescriptions.

Before these plans can be taken up again, legal issues will need to be clarified. Even though ePrescribing was made possible to use electronic prescriptions under the Czech legislation since 2008³³, new legal issues arose. So far the State Administration for Drug Control, which is responsible for procedures related to medical drug dispensing, is not legally authorised and mandated to store medication data. Healthcare professional ID and authentication matters will also need to be clarified before ePrescribing can be implemented nationally. The Czech Republic's participation in the epSOS project might help to overcome these challenges.

3.3.3 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”³⁴. 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 delivery³⁵.

³¹ European Patients Smart and Open Services (epSOS)

³² empirica 2005

³³ Act on Pharmaceuticals No. 378/2008, the Decree on Pharmaceuticals Prescribing Procedure, Data Indicated on Prescription and Rules for Prescription usage No. 54/2008 and the Decree on Correct Pharmaceutics Practices, Closer Conditions for Manipulation with Pharmaceuticals in Pharmacies, Healthcare Establishments and other Operators and Establishments Issuing Pharmaceuticals No. 84/2008 contain the requirements for the content and the issuing of prescriptions, both paper-based and electronic.

³⁴ Europe's Information Society

³⁵ European Commission 2008

Tele-monitoring and tele-consultation projects

As in many other countries, telemedicine and telemonitoring services are not very widely spread in the Czech Republic, although there are some projects and pilots. Telemonitoring for elderly people is offered by the organisation ZIVOT 90³⁶ (English translation: Life 90). They are part of the ENABLE project which is funded by the 6th FP IST. Teleconsultation between doctors and patients is under exploration in the newly launched GHIC quality care project AKORD. Teleconferences between healthcare professionals do exist, but not in any regulated and institutional manner. In radiology the PACS system is used for access to images in some teaching and other hospitals.

Funding is seen as the main challenge for further strengthening of telemedicine and telecare services in the Czech Republic. Due to the general economic situation, the state cut down significantly on the health and social care budgets through which such services would generally be financed³⁷. Many of the initiatives in the field of telecare are targeted at elderly people, who tend not to be financially affluent after a life of relying on a state welfare system which is at the moment not in a situation to be able to pay high pensions. Should the general development go in a direction where increased private saving and others factors make this part of the population an attractive clientele for service providers, an increase in the range of offered services is to be expected. Meanwhile, the social organisations offering the above services are aware of the need to increase their competence in using the full potential of fundraising and other financing tools.

The insurance company of Interior Affairs of the Czech Republic is one of the insurance companies, who launched a solution called “The life card”. The solution is very similar, almost identical to IZIP. The solution has been available since September 2009 and offers insurers and GPs important information about patient health conditions. The data are stored on the database servers owned by the insurance company. The Life card contains the detailed list of expenses on provided care (for the period of 3 years). The list is divided into 3 parts. The first part chronologically orders the expenses by: amount, price, name of the service provided and paid, the healthcare institution, which provided the service. The second part shows drugs and service paid for by the insurance company month by month, for the last three years. This part also contains hospitalization. Each column ends with the total price for each year. The third part, by clicking, places all data into a graph. The second service offered by the Life card is called correct and safe treatment. The client has the option of filling in important data about health such as: who to call in case of emergency, GP contact, history of the patient, chronic diseases, allergies, family anamnesis, surgery and injuries underwent up til now, permanent medication, actual medication, last tetanus vaccination, vaccination calendar – for kids only, smoker/nonsmoker, height, weight, notes. Some of these are available to the emergency services. The Life card does not substitute medical documentation, but summarises basic information. The patient decides who can view this information. The Life card was inspired by electronic health cards issued in Germany.

The insurance company also highlights the importance of cooperation with the GPs, so in the frame on their portal, doctors with a PIN and a PUK can enter the menu called eCommunication and may display information about patients in his care. The insurance

³⁶ Website: www.zivot90.cz

³⁷ There are separate ministries and budgets for social and healthcare affairs, and care for the elderly mostly is handled by the Ministry for Social Affairs.

company may view the patient's information. Patients are sorted by the ID they were given or by the criteria created by MV CR which are:

Decil: the insurance company distinguishes the patients according to expenses and sorts them into categories – decils (decil 1 – the most expensive, 10 – the cheapest). Based on the situation– if the GP can view the patient's status they can make the treatment cheaper, with the decil the patient is also placed in a category from A to C. The third is the category, how long does the patient receive the most expensive level of treatment. The patient is also given a position from 1 to 3; position 1 shows insurers, who moved from the 2nd most expensive treatment to the 1st, so that they can pay attention to this patient because costs are increasing. This system for GPs is part of the strategic development. The insurance company, in its Strategic Health Insurance Plan 2009, declared to work on the strategic development of the information system (2010-2012). The system for GPs is part of it. The aim is to enlarge functionalities of eCommunication on the portal, open it further to GPs, complete the necessary steps to open it more to clients, and connect it to the information system. Part of this system is rationalisation of the processes within the organisation, support of the necessary routine work, exchange of the HW and digitalisation, accounting, support in the field of insurance premiums income etc³⁸.

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 the Czech Republic and for which purpose.

3.4.1 Unique identification of patients

Traditionally, the birth certificate number is used to identify citizens for social insurance and healthcare purposes. The use of the birth number for identification purposes is strictly regulated by law and is subject to prior approval by the inspectors of the Office for Personal Data Protection. The General Health Insurance Company (GHIC) has a legal mandate³⁹ to maintain a specific centralised health insured persons registry based on the birth number. The GHIC covers 70% of all clients in the Czech Republic and is the only one directly controlled by the State. The GHIC however does not only administer the database for its clients, but also for the clients of the other insurance companies. The other insurance companies pay the GHIC for the maintenance of this database. The registry is regularly updated by the GHIC's regional branches. These offices keep track of the insurance status data in their region and pass on the information to the central registry.

³⁸ Jaromír Gajdáček 2009

³⁹ Law on insurance companies (no. 48/1997).

3.4.2 Unique identification of healthcare professionals

The GHIC also administers the database of all healthcare professionals and facilities which are on contract with insurance companies in the Czech Republic, this is the case for the majority. They are assigned a professional ID number by the GHIC this is associated with the healthcare facility at which they work. The number of the healthcare facility-IČZ- is generated by the Institute of Health Information and Statistics of the Czech Republic, an organisation within the Ministry of Health. However, the healthcare professional's ID number is not unique and transferable to other administrative fields. The Medical Chamber, for example, requires this number for their internal purposes, but it is not a legal requirement that other institutions, whether state or privately run, use this same number for identification, although choosing not to use this number will make business more complicated. The registry is not generally digitally accessible, but information requests can be sent to the GHIC.

Apart from the database of the GHIC, physicians, dentists and pharmacists are also registered in the so called "Register of doctors, dentists and pharmacists" established by the state Institute of Health Information and Statistics⁴⁰. This register contains information about the qualification, specialization and working environment (public medical establishment or private praxis) of the healthcare professionals, who are identified through their birth number.

Information on other healthcare professionals is available also through the IHIS, but is included in the register of health establishments. Contrary to the Register of doctors, dentists and pharmacists, this register does however not contain information about individuals, but only indicates total numbers of paramedical workers per establishment.

The main challenge for creating a more general and unique healthcare provider ID is to clearly define which features are needed. Apart from general authentication, it would be useful to define roles and categories of healthcare professionals in order to regulate their access to patient data and to assign different levels of rights and obligations. Another desideratum would be the integration of professional career data, as well as information on the affiliation with an insurance company. The legal environment would then need to be adjusted accordingly. Also, a competent authority for the technical administration will need to be defined, along with the methods of monitoring routine operation and evaluation.

3.4.3 The role of eCards

So far, the idea of an eCard with a microchip serving as ID, driver's license, insurance status verification and electronic signature tool is under public discussion, but not yet on the political agenda. It was planned within the eHealth strategy to use the electronic European Health Insurance Card (eEHIC) for both health professionals and patients. However details about identification, authentication and security still needed to be specified. Many questions furthermore need to be solved with regard to, for example, registries interconnectivity. It would moreover be necessary to decide on legislative foundations for eCard use and functions, but also which institution would be responsible for administration and controlling issues.

⁴⁰ Media System 2007

3.4.4 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.

The Ministry of Health follows a strategy of training and advising rather than legally prescribing the use of health information standards. They endeavour to raise awareness about the issue among providers by holding seminars, and they commissioned a study exploring standards use in the Czech Republic and making recommendations. The study was funded by the European Structural Funds.

With reference to the Coalition contract and actual status of healthcare in the Czech Republic, the reconsideration of healthcare investment sees eHealth as a serious possibility for lightening the current situation. The existence of National Reference Centre (Narodni referencni centrum, www.nrc.cz) shows, that healthcare and eHealth itself needs lots of preparatory work. Some of main targets of NRC are: supporting the emergency bed care sector while implementing DRG as a refund mechanism, reviewing the performance lists, using insurance houses' production data for monitoring quality of provided care and training and certification in the area of DRG coding. In line with this, NRC is a partner of several project dealing with medical standardisation and definition further also crucial for establishing medical standards and above-standardized care.

Close cooperation with the Ministry of Health is expected to provide payers, providers and the Ministry with an expert view of activities that are going to be the technical basis for methods of healthcare payments, quality and efficiency assessment and development of DRG use.

Currently, mostly ICD 10 and the data standard of the Ministry of Health (DASTA) are in use. The option of becoming a member of IHTSDO is under consideration. HL7 is not yet very much advanced in the Czech Republic.

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.

In the Czech Republic, different aspects relating to eHealth are dealt with in several laws.

The Law on Care and Health of the Population No. 20/1966⁴¹ is the main act for the health sector. Apart from many other provisions not of particular relevance for eHealth,

⁴¹ As amended by act no. 548/1991

**Patient control
over health**

the act defines the requirements for electronic health documentation and establishes several registers used in the health sector, amongst which the National Health Register. The act first of all lays down that medical documentation may be handled in paper or electronic form, upon the responsibility of the healthcare professional who has to take care of the storage, maintenance and security of all his healthcare documentation. Requirements on the content of the health records are specified in the Decree on Medical Documentation No. 385/2006. The same Decree also specifies that all health records need to be archived for – depending on the type of record – a minimal period of 5 to 150 years. Unfortunately the Decree is not yet adapted to electronic health records. Finally the Decree on Data Exchange with the National Health Information System No. 552/2004 enforces once more the obligation of healthcare professionals to enter data into the appropriate health records.

In the Czech Republic the patient is ought to be in full control over his health record. Czech Republic law specifies that the patient has full access rights to his health records, can request a copy, can restrict access rights of healthcare professionals and can request the healthcare practitioner to pass on his health records to any other healthcare practitioner. Unfortunately the law is however not clear about the ownership of the health records. Consequently, the patient too is bound by the legal storing obligations mentioned above and can not decide on the disposal of his records. The latter is different with IZIP EHRs. IZIP states explicitly that its electronic health records are owned by the patient.⁴² IZIP furthermore states to be fully in line with the Law on Data Protection (no. 101/2000) and to have adapted its procedures to the existing legal situation. Patient rights are granted by IZIP regulations, such as the right to allow or disallow access to the health data for others, be it family, physicians or carers. Patient consent to creating the EHR is given through the act of signing the application form. This form also includes a section in which patients agrees with data utilisation for e.g. statistical purposes and research. For children, the form is signed by a legal representative, the same goes for incapacitated patients, e.g. in case of mental disorders. The registration form is available on the IZIP website, at the company headquarters or at GP practices.⁴³

In order to make ePrescribing possible in the Czech Republic, legislative changes were already made. Since 2008 the Act on Pharmaceuticals allows electronic prescriptions and establishes an “Electronic Prescription Central Repository”⁴⁴. The Act was issued on the 6th of December 2007 and stated that the Electronic Prescription Central Repository had to be ready one year later, being the end of 2008. As mentioned above this deadline was not met and ePrescribing is currently still on hold.

Worth mentioning is also the legislation on personal identification: the Act on Citizen's Evidence and Birth Numbers⁴⁵. As indicated above, the use of the citizens' birth number is strictly regulated by the first act. Currently the birth number is used for personal identification in almost all information systems in the Czech Republic. Usage of it in the health sector is however under discussion. An amendment to this act and the issuance of

⁴² See section 4.3.1. on Patient summary and EHRs.

⁴³ See section 4.3.1. on Patient summary and EHRs.

⁴⁴ Section 81 and 82.

⁴⁵ No. 133/2000

**Personal Data
Protection Act**

a new act on Citizen's Registers was planned by the Ministry of Interior, but has been on hold since governmental changes.

Lastly the Personal Data Protection Act No. 101/2000 should be taken into account. The Czech data protection regime is very similar to the one of the Data Protection Directive. The Czech law is characterized by its broad access rights. Apart from the patient himself, also family members or other related persons have extensive rights. The patient can first of all always designate another person who should be informed about his state of health. Once consented, the information will be provided to family members by default, unless the patient forbids so. Secondly related persons have always the right to access health documentation after the death of the patient. This right was explicitly included in Czech law in 2007.

3.6 Financing and reimbursement issues

There are no specific budgets for eHealth in the Czech Republic. eHealth projects or applications are usually funded from general health or ICT budgets, e.g. in case of hospitals deciding to buy an information management system. The main national sources of financing eHealth projects and infrastructure would generally be the health insurances, especially the largest (General Health Insurance Company), and the government. Any GHIC involvement in eHealth related transactions is based on health insurance contributions. In the Czech Republic, the ten health insurance companies are controlled by boards, nominated by Parliament (2/3) and Government (1/3).. They collect health insurance contributions from citizens and pay healthcare providers. Contributions amount to 13.5% of an employee's gross wage, with 9% paid by employers and 4.5% by employees. The self-employed and people with no taxable income pay for themselves. The state pays the insurance contributions for children and pensioners. Every citizen is legally required to pay insurance premiums. The minimal rate is set at 13% of the citizen's wage per year by law.⁴⁶

The main form of reimbursement by insurance companies to primary care physicians is capitation. Services such as preventive examinations or visits to patients' homes are paid under an additional fee-for-service system. In contrast to GPs, specialists are paid through fee-for-service payments only, with limits on the volume of services reimbursed. Since 1997, hospitals have been financed through an annual budget, based on the resources employed during the previous calendar year. Reimbursement takes place by invoicing insurance companies for these services, up to the set budget. Since 2001, hospitals receive a flat fee based on the number of treated cases in each hospital in addition to the budget.⁴⁷

Due to the low financing in healthcare, there is an increasing number of companies which offer hospitals smaller eHealth solutions for a fee. Hospitals finance the payment of these fees from the money that is saved by the adoption of the new system provided by the company. This form of business in healthcare has increased as financing for eHealth has been depleted and the IT budgets of hospitals are very small and must also cover

⁴⁶ empirica 2005

⁴⁷ European Commission and DG INFSO & Media 2009; Bryndová L 2009

other priorities such as maintenance. This increase in business is not massive but it is, however, unanticipated and signals a small step towards accepting healthcare as a market for which market tools and mechanisms will be utilised.

A definition of what standardised care is needed. The system of healthcare is quite tight and does not give many opportunities to earn; hospitals cannot act as a private subject, although legally they are. E.g. if patient comes to the hospital and he is not insured, the hospital can charge only permitted value of the point. Setting, defining the standard, the hospital has free chance to offer the clients broader spectra of services and charge the above standard at the prices management intend. This opens opportunity to offer more services and gives the green light the hospital with enterprise and act economically.

The Czech Republic is also looking to make use of European Commission funding opportunities in order to boost eHealth implementation. The projects mentioned in section, were planned to be financed from European Structural Funds, but no significant sign, how this ended up. Even members of the Committee cannot answer me this question. This sleeps. To your question: No funds specifically dedicated to eHealth. If hospital wants some interoperable system, they finance it from IT shelf

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 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.

So far there have been no official evaluations of eHealth applications in the Czech Republic, but the IZIP EHR system has been studied as a pilot case by the European Commission funded projects, e.g. eHealth Impact and. The Kolín-Čáslav health data and exchange network was the subject of one of the reports produced by the EHR Impact study, looking at process change issues and the socio-economic impacts.⁴⁸

4 Outlook

In terms of future reforms for the Czech healthcare system the focus will be on codifying patient rights, clarifying the purchaser-provider relationship and refining the SHI system.

The new government also looks towards the fulfilling of necessary legal changes to reach eHealth goals which were formed in a coalition contract signed by political parties on 12th July, 2010 the binding date for the delivery of this is 1.1.2012. The roles of the Kulaty Stul and the Interdepartmental Committee which were developed under the last government have also to be confirmed.

Another interesting development for the future is the further possibilities for the functionalities of the IZIP EHR application, will be explored in the context of the epSOS project⁴⁹. The hope is that this will also include resolution of healthcare professional ID and authentication matters. With these matters resolved the implementation of a national ePrescribing system should be able to take place.

The development of legislative foundations for eCard use and function are also on the Czech government's agenda however it has yet to be decided which institution would be responsible for administration and controlling of related issues.

⁴⁸ European Commission and DG INFSO & Media 2009

⁴⁹ European Patients Smart and Open Services (epSOS)

List of Abbreviations

DASTA	Data Standard of the Czech Ministry of Health
DRG	Diagnosis Related Group
EC	European Commission
EEA	European Economic Area
eEHIC	Electronic European Health Insurance Card
EHR	Electronic Health Record
EMR	Electronic Medical Record
EMS	Ambulance Emergency Service
EPR	Electronic Patient Record
epSOS	European patients Smart Open Services
ERA	European Research Area
EU	European Union
GDP	Gross Domestic Product
GHIC	General Health Insurance Company
GP	General Practitioner
HCP	Healthcare Provider
HL7	Health Level Seven International (authority on standards for interoperability)
HMO	Health Maintenance Organisations
HPC	Health Professional Card
ICT	Information and Communication Technology
ID	Identification (e.g. number, card or code)
IHTSDO	International Health Terminology Standards Development Organisation
IT	Information Technology
LSP	Large Scale Pilot
MoH	Ministry of Health
NRC	Narodni Referecni Centrum
OECD	Organisation for Economic Co-operation and Development
PHS	Personal Health System
R&D	Research and Development
SNOMED	Systematized Nomenclature of Medicine-Clinical Terms
SÚKL	State Institute for Drug Control

WHO

World Health Organization

5 Annex

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

Source: Dobrev, Haesner et al. 2008

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