

eHealth strategy and implementation activities in the Czech Republic

Report in the framework of the eHealth ERA project

Authors: Mariusz Duplaga, Jagiellonian University Medical College
Mikołaj Leszczuk, AGH University of Science and Technology,
Krakow
Alicja Wirska, CITTRU, Jagiellonian University
Sylwia Bukowczan, Jagiellonian University Medical College
Anna Andrychiewicz, University Hospital, Krakow
Wojciech Trąbka, Jagiellonian University Medical College

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<http://www.ehealth-era.org>
era@empirica.com

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The European Commission, Directorate General Information Society and Media, supports this project to contribute towards greater transparency across Member States and other participating countries on eHealth strategies as well as innovation-oriented research and technology development (RTD) initiatives, including the coordination of Member States' eHealth strategy formulation and implementation. Thereby the project aims at fostering the establishment of an effective European Research and innovation Area (ERA) in eHealth. All project results are available on the internet and can be accessed at the *eHealth ERA* website: www.ehealth-era.org.

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Contact

For further information about this country report or the eHealth ERA project, please contact:

	
CITTRU, Jagiellonian University Czapskich Str. 4, 31-110 Kraków, Poland Mariusz Duplaga mmduplag@cyf-kr.edu.pl	eHealth ERA c/o empirica GmbH Oxfordstr. 2, 53111 Bonn, Germany Fax: (49-228) 98530-12 era@empirica.com

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Country Report: *Czech Republic*

1 Executive Summary

The Ministry of Informatics, and the Ministry of Health have the greatest impact on policies related to eHealth development in the Czech Republic. In 2002, the Ministry of Informatics issued the "National Action Plan eEurope+ Czech Republic" which includes a subsection on on-line Health (Zdravotnictví on-line) under the third objective "The Support of Internet Use". That document stresses the Government's intent to actively promote deployment of the latest ICT, and their view that ICT use is an essential condition for improved affordability and quality of health care to citizens. The key targets/outputs for this area assigned to the competencies of the Ministry of Health cover registers, telemedicine and medical documentation. The deadlines for achieving the targets were initially scheduled within the period 2001-2005. The plans envisaged by the Czech Government in the document "National Action Plan eEurope+ Czech Republic" include gradual substitution of existing health insurance cards with smart cards, establishment of the system providing public health information and development of information network linking care points in Czech Republic. Those plans addressed also the task of preparation the portal supporting electronic reimbursement transactions.

One of the most successful initiative established in e-Health domain in Czech Republic is nationwide electronic health record system. It was developed and provided by IZIP Inc. to insurees and health care institutions. The system covers also other functionalities, apart from electronic health record, such as ePrescription, eMessages and eAlarming.

National legislation in the Czech Republic addresses the following issues related to e-health domain: data protection, telecommunications (with regard to data protection and confidentiality), and authorised digital signatures. The latter enables legal validity of electronic documentation as well as provision of e-prescription services and medical professional registries.

Future e-health domain activities conducted in the Czech Republic will be focused on wider usage of ICT and integration of applications used in healthcare with the aim of improvement of quality of health care services.

2 Basic Facts

The area of Czech Republic is 70000 square km and its population 10.3 million people. 94% of the population are Czechs, 3% Slovaks, there are also smaller populations of Poles, Germans, Roma people and Hungarians living in Czech Republic. Czech Republic is a member of European Union from May 1, 2004.

3 Healthcare System Overview

3.1 Basic Facts and Features of the Healthcare System

3.1.1 The Main Decision Making Level for Health Care Policy

The main role of the Ministry of Health is to directly manage and control some of health care institutions and bodies participating in the protection of public health. Its supervising power is also extended to hospitals acting on regional or supra-regional scale.

The scope of activities covered by the Ministry of Health encompasses:

- Protection of public health
- Scientific research in health care
- Supervision and management for some of health care institutions (assigned directly to Ministry in term of controlling body)
- Medication
- Health care technology
- Health insurance and health care information system as well as protection of natural resources (spas, mineral waters)

Institutions remaining under supervision of the Ministry of Health: National Institute of Public Health, Nat. Health Board, Institute of Health Information and Statistics, National Board on Environment and Health, Drug and Technology Control Institute, Committees focused on specific areas. Legal framework for health care related activities in the country, specifically those of the Ministry of Health is designated by Parliament establishing relevant laws [1].

3.1.2 The Main Healthcare Service Delivery Systems in Czech Republic

The provision and management of health care services is carried out through health offices existing at the regional and district levels. Primary care provided in health centres that are usually owned by the municipalities and rented by private general practitioners. Primary care providers encompass general practitioners for adults, for children adolescents, gynaecologists

and dentists. They usually work in private practices which are financed on the basis of the capitation.

Hospitals are in most cases owned by a region, district or municipality. The state is responsible also for the university hospitals and specialized centres. About 10% of all hospital beds are provided by private facilities in Czech Republic. Hospitals contract provision of services with health insurance funds. 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.

Social health insurance system is based on the mandatory insurance for the whole population and public/private health care institutions providing services. The provision of the health care services is carried out through the system of contracts.

Health expenditures as percentage of GDP are estimated to remain on the level of 6.6% [1].

3.2 National Level Health Goals

The main issues and strategic targets of the national (or regional) healthcare policy and implementation in Czech Republic for the period 2005-2010 has been defined in "Health 21: A long-term programme for improving the health of the population of the Czech Republic" published by the Ministry of Health (Ref.: HEM-300-16.10.02/28915. Government resolution 1046, 30 October 2002), policy timeline: 2002-2020 [2], [3], [4].

Specific national targets have been defined as follows:

- Solidarity for health in the European region
- Equity in health
- Healthy start in life
- Health of young people
- Healthy aging
- Improving mental health
- Prevention of communicable diseases
- Reducing non-communicable diseases
- Reducing injury from violence and accidents
- Healthy and safe physical environment
- A healthier lifestyle
- Reducing harm from alcohol, drugs and tobacco
- Settings for health
- Health as an important aspect in the activity of all sectors
- Integrated health sector

- Managing for quality of care
- Funding health care services and allocating resources
- Preparing health professionals
- Research and knowledge for health
- Mobilizing partners for health
- Policies and strategies for HFA

The major currently running national programme for public health is Public Health Program Overview [5].

4 Strategic eHealth Plans/Policy Measures

4.1 National-regional eHealth Policy

The Ministry of Informatics and the Ministry of Health are involved in definition of ehealth policy.[2][6] National Action Plan eEUROPE+ Czech Republic (2002, 2003) prepared by the Ministry of Informatics under the theme 3 “The Support of Internet Use” addressed the issues of on-line health (subsection: Zdravotnictvi on-line). Targets include: registers, telemedicine, and medical documentation in competency of Ministry of Health. Deadline for targets was given then 2001-2005.[7][8]

The body having the main responsibility for drafting national ehealth roadmap was Ministry of Informatics in cooperation with Ministry of Health and its specialised institution, the Institute of Health Information and Statistics of the Czech Republic (IHIS CR) responsible for National Health Information System.[6][9]

Document stresses Government’s view that the use of the latest ICT is an essential condition for the affordability and quality of health care and will actively promote them. At the same time, deployment of ICT is viewed as a way of increasing the efficiency of the care provided and achieving a higher quality of citizens’ lives. The plans of the Czech Government included [7]:

- Gradually replace the existing health insurance cards with smart cards, compatible with EU standards, and according to EU schedules.
- By the end of 2005, roll out a system providing public health information.
- By the end of 2006, build up an information network connecting points of care in the Czech Republic, to other points in the EU, and enabling the sharing of public health data and coordination of activities in the event of life and health emergencies.

Implementation work towards achieving the ehealth roadmap goals did start in 2004. The Institutions from Czech Republic participate in the project NETC@RDS (other countries from CEE represented in the consortium: Slovakia and Hungary).[10]

4.2 Dissemination and Co-ordination Activities

The activities that have been launched for making the national/regional ehealth roadmap more widely known included expert group consultations, workshops and online information.[6] Workshops and online information was addressed specifically to healthcare professionals.

4.3 Investment and Reimbursement Framework

Some initiatives related to ehealth area in Czech Republic were funded from the PHARE Programme and World Bank. [11][12][13]

5 eHealth Deployment Status

5.1 eHealth Infrastructure

5.1.1 Physical Networks

Generally, leased lines of up to 155 Mbit for national and 34 Mbit for international and lengths up to 200 km for national scale are provided in the Czech republic. Prices lists are available only for lines with band up to 2 Mbit. Above this, rate prices are negotiated individually.

The whole range of technologies available nowadays is also used in Czech Republic on the basis of commercial rates. More than 40 providers operate on the Internet access market. RTC access – is the most commonly used technology; high-speed access is also available:

- DSL (from February 2004 offered by the Cesky Telecom – more than 160000 users; the network of the Cesky Telecom covers about 90% of the country area
- Cable access – provided by TV operators (UPC – 50000 users, Karneval 20000 users and Self Service)

On January 26, 2005, the Government approved policy titled “National Broadband Strategy”. The aim of this strategy is to support modern on-line services including ehealth and telemedicine services.[12][14][15]

Data Network of Health Department was also established in Czech Republic. It is multifunctional network of selected health institutions which are supposed to establish the funding for planned infrastructure of National Health Information System (NZIS). DSRZ is developed on the basis of TCP/IP protocol using the public network infrastructure of TCP/IP EUnet on top of which is situated non-public network infrastructure of VPNs with the use of encrypted IP/IP tunnels. The transmission is separated from public Internet in it.[16][17]

Share of healthcare facilities in the Czech Republic using the Internet as information tool was 88% in 2003. The use of the Internet as communication tool was declared by 75% of healthcare facilities in 2003. Share of healthcare facilities in the Czech Republic using the Internet for communication with health insurance funds was equal 45%, with other healthcare facilities 30%, with patients 20%, with pharmacies 16% and with administration institutions 48% in 2003. Furthermore, 31% of physicians from the independent surgeries in the Czech Republic used Internet for communication with health insurance funds in the same year.[18]

5.1.2 Legal and Regulatory Framework

There is national legislation in the Czech Republic which addresses the issues of data protection, telecommunications (with regard to data protection and confidentiality) and digital signatures.[19][20][21] The Czech Republic adopted also the legislation on medical equipment which could be relevant in the context of Health-IT product liability.

Legislation regarding the data protection, telecommunications and digital signatures issues was introduced or updated in 2000. The relevant national bodies and authorities that have the responsibility of overseeing and co-ordinating the development and enforcement of the legal and regulatory requirements for the areas above are:

- Data protection:
 - Office for Personal Data Protection
- Telecommunications:
 - the Czech Telecommunications Office
 - the Office for the Protection of Economic Competition

In 1996, the Ministry of Transport and Communications became the authority responsible for telecommunications, especially for:

- the formulation of national telecommunications policy and main principles of telecommunications regulation, including legislation activities,
- insuring that international obligations regarding telecommunications are met,
- coordination of EU integration activities in the area of telecommunications,
- approval of frequency allocation plans.

The Ministry of Finance is responsible for decision-making in relation to regulation of the price of all telecommunications services. In January 2003, the Ministry of Informatics was established. It was responsible for the coordination of activities related to telecommunication and the promotion of the information society. The Ministry of Informatics represents also the Government of the Czech Republic in the EU in the area of electronic communications and information society.

National legislation within these key areas has been harmonized with following EU level regulations: Data Protection Directive, Directive on a Community framework for electronic signatures, Directive on Privacy and electronic communication as well as Directive on electronic commerce.[22]

5.1.3 Education and Training on ICT – Overview and Discussion

There are education programmes available on the national level in the Czech Republic focused on the promotion of the acquisition of ICT skills by the general population. The National Program for Computer Literacy, available from 2003, is coordinated by the Ministry of Informatics.[23] Interdisciplinary approach to education and training in the field of medical informatics is promoted by European Centre of Medical Informatics, Statistics and Epidemiology in Prague. Educational materials on ehealth were prepared within the project titled “Information Technology Education and Training” (IT-EDUCTRA). The project was carried out by the consortium with participation of the partner from Czech Republic.[24]

5.2 eHealth Applications and Services

5.2.1 Electronic Health Records

The nationwide system of the electronic health record accessible through Internet and provided by company IZIP Inc. is one of the most successful initiatives in the area of ehealth in Czech Republic. The main objective of the service was to develop medical database of insured patients who consent to include their data to the public information network through Internet. The database structure includes medical documentation entered to the IZIP system by the physicians taking care of the patient in various care facilities. The main assumption is that only the patient has access to data for reading it in the database and he or she may authorise other person to browse his or her medical data. In this way, upon the content of the patient, every health care institution or professional taking care of the patient may share information on provided services. The IZIP service is operational from several years now.[12][25]

5.2.2 Health Cards

The cluster of projects conducted within PHARE programme focused on the utilization of smart cards for the electronic identification of persons (Mácha 1, Mácha 2) by the Ministry of Health and the General Health Insurance Company (the largest health public insurer).

The activities conducted within the projects included:

- Design of the smart card and determination of its contents

- Provision of the card readers to ambulances, hospitals and part of physicians as well as pharmacies

The cards were used within these projects as the health insurance identification card for the insured persons. The pilot implementation covered distribution of 10000 smart cards to residents of Litoměřice. Another project navigated by the Ministry of Labour and Social Affairs aimed additional functionality of smart cards in relation to the welfare services. It was based on the idea of keeping social security administration data in the otherwise unused part of the smart card from the Macha project.[12][11]

Czech Republic is also in the process of preparing the introduction of a new health insurance cards available for insured persons. The card will be available for the person insured by General Health Insurance Fund of the Czech Republic (VZP CR) and its reverse will have the format of European health insurance card (EHIC) format.

Czech Republic participates also in the NETC@RD project. Pilot implementation sites were selected in Prague and Moravia for this project.[10]

5.2.3 Health Portals

Health-related portals targeting various groups of users are available in the Czech Republic. Most of them provide general health information, disease-specific information and information on services

The „Virtual health-portal” Ordinance is a comprehensive service addressing following areas and functionalities:

- a selected extract of most common diseases
- self-treatment of less serious complaints
- health-related issues: medical terms, surgery, etc.
- answer to specific questions, answered by specialized staff
- online pharmacy
- discussion forum
- up-to-date reports

Medvik is a virtual library of medical and health-related documents developed from 2004.[26] It is funded and managed by several medical institutions: the National Medical Library, the Institute of Clinical and Experimental Medicine, the Institute for Postgraduate Medical Education and the Institute of Haematology and Blood Transfusion.

The MedGate is the name of a global health-related Internet portal funded by the Ministry of Education, Youth and Sports. It is expected that this portal will become access point to

numerous databases and digitized collections. Furthermore, it should also play the role of medium connecting many medical institutions.[14]

5.2.4 Risk Management and Patient Safety

Institutions from the Czech Republic, VSB Technical University of Ostrava and National Institute of Public Health, participate in the international consortium conducting the IMPROHEALTH project. It is carried out under the umbrella of Leonardo da Vinci program. Its mission is to broaden the access to the vocational managerial education and training in order to improve quality, effectiveness and efficiency of the healthcare organization services. Its main objectives are the establishment of the Virtual Quality Centre (VQC) for managerial Vocational Education and Training (VET), development of the e-Glossary, authoring of materials for courses and training in the area of implementation and improvement of quality management system, provision of the pilot e-Course, management of the information days and special seminars and dissemination. The project was started in 2006.[27]

5.2.5 Other ICT tools assisting prevention, diagnosis, treatment, health monitoring, lifestyle management

The Metropolitan PACS is an information system developed within the Metropolitan Digital Imaging System in Medicine (MeDiMed) project. The main functionality of the system is based on the archiving of medical images, and then enabling the access to them to authorised users. Metropolitan PACS Brno is used by chosen hospitals for archiving and sending medical images (ultrasound, CT, magnet resonance etc.) with each other. The central part of the PACS is a large archive that is installed at the Faculty of Informatics, Masaryk University in Brno. Transmission of the data is carried out through the metropolitan network. Images stored in the archive can be quickly sent to any specialist who has access to Internet. Medical images are obtained from the diagnostic devices connected to the PACS. Images that are stored in the PACS archive may be analysed by dedicated diagnostic software.[28]

5.2.6 Telemedicine Services

The provision of telemedicine service was the objective of several projects and programmes carried out in the Czech Republic. The MEDTEL was designed as a platform for all types of stakeholders interested in health informatics and telemedicine. Telemedicine is also actively supported through diversified types of projects carried out in EuroMISE Centre. Prof. Rosch Foundation with support of Czech Telecom in Czech Republic carried out the TELEMEDICINA project. Its main objective was establishment of pilot implementation in the area of clinical applications: teleconsultations during the surgery, teleeducation with the application of

transmission of operations to physician undertaking training. The project covered several centres in Czech Republic.[29][30]

6 eHealth RTD Status

The main actors in RTD policy setting in Czech Republic are [31]:

- The Ministry of Education, Youth and Sports (elaboration of national programme draft)
- Technology Centre of the Academy of Sciences of the Czech Republic
- the Engineering Academy of the Czech Republic (establishment of research priorities for the national programme)

RTD activities are performed in the Czech Republic by the Universities, research institutes and private companies. The major national funding source and agency in the Czech Republic is Council of the National Research Programme approved by the Minister of Education, Youth and Sports [31].

Main thematic programmes specified in the National Research Programme are [31]:

- Life quality (human health, quality and safe nourishment of population, landscape and settlement of the future, environment and natural resources protection)
- Information society (Intelligent systems for decision making, management and diagnostic, information and knowledge management, communication infrastructure and technology, computer modelling and design of systems and processes)
- Competitiveness at Sustainable Development (production processes and systems, safety and economical transport, buildings and constructions, advanced materials, emerging technology, utilisation of natural resources)
- Energy for Economy and Society (safety and effective nuclear energy, power and non-power producing utilisation of coal and carbonaceous raw materials, rational use of energy renewable energy sources)
- Modern Society and its Transformation (performance-oriented, safer and European integrated society, social cohesion, social differentiation and national identity)

Furthermore, three cross-sectional programmes were also included in the National Research Programme [31]: Human Resources for Research and Development, Integrated Research and Development, Regional and International Cooperation in Research and Development.

Research topics and priorities cover also the area of ehealth. The programmes relevant to some degree to ehealth include also ICT applications, Bioinformatics, Genomic, Proteomics, Nanotechnologies, Micro-devices, New materials.[31]

International cooperation is supported by several programmes: KONTAKT (support for bilateral as well as multilateral co-operation), INGO (cooperation in research among non-governmental organisations), EUPRO (co-operation within framework programmes), COST (support for diverse co-operation in research), EUREKA (support for applied research and development), international co-operation within the National Research Programme [32].

Among the established research centres, the European Centre for Medical Informatics, Statistics and Epidemiology reveals the most focused interest in ehealth domain. Support actions focused on the promotion of ehealth related innovation on the regional or national level include conferences, seminars, studies and analyses, expert groups, information and communication [33]. Apart from research centres and university departments focused on the ehealth domain, no specific structures and mechanisms to promote and support innovation related to this field have been identified in the Czech Republic.

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