

Country Brief: Portugal

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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

In February 2010 the Portuguese governmental agency ACSS (Administração Central do Sistema de Saúde) published a report on the definition of a national electronic health record, including patient summary and a roadmap to achieve it. This report was the result of discussion among stakeholders on the issues and requirements of a national electronic health record. In conjunction with this report the government presented a strategic technological plan (Plano Tecnológico da Saúde – PTS) in November 2008, which defined the main goals of the governmental policy for the eHealth domain. A forerunner to this plan is the “Transformation Plan for Health Information Systems”¹ in Portugal from November 2007.

In order to consider Portugal’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 Portugal’s situation is as follows:

At present a patient summary is being developed in the scope of the “Rede Telemática da Saúde” project (RTS). If the epSOS II proposal is approved RTS will be used as a test bed for the Portuguese pilot site as well as being used as a test site for the future national EHR (RSE) with the aim of interoperability. A national EHR system (RSE) has been in planning in Portugal since 2009, which will include a basic patient summary, and for which local pilots are already running, involving both hospitals and primary care settings. Additional condition-specific summaries are also in planning at present.

In Portugal, most hospitals and health centres have had electronic applications for prescribing since 2004. However, there is not an eTransmission service; no medication record for the patient (except at a local level) and only basic decision support tools in place. At regional level, ePrescription pilots are ongoing.

Portugal uses international standards. Standardisation and quality in general are supervised by the department of the National Ministry, Instituto Português de Qualidade – IPQ (a public institute under the Portuguese Ministry of Economy and Innovation). So far there are no plans at this time for Portugal to become a member of the IHTSDO.

There are many local and regional telemedicine activities in Portugal in the fields of, among others, cardiology, radiology and dermatology although there is no official national initiative. There are also some international projects, mainly involving the North of Portugal and Galicia and between Portugal and some Portuguese speaking African countries (e.g. Angola, Mozambique, Cabo Verde and Guiné-Bissau).

¹ Plano de Transformação dos Sistemas de Informação Integrados de Saúde (PTSIS)

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1 Introduction to the report

1.1 Motivation of the eHealth Strategies study

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

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

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

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

² European Commission 2004

³ European Commission 2007

⁴ European Communities 2007

⁵ European Commission 2008

⁶ European Patients Smart and Open Services (epSOS)

⁷ eHealth Priorities and Strategies in European Countries 2007

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

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

1.2 Survey methodology

After developing an overall conceptual approach and establishing a comprehensive analytical framework, national level information was collected through a long-standing Europe-wide network of national correspondents commanding an impressive experience in such work. In addition, a handbook containing definitions of key concepts was distributed among the correspondents to guarantee a certain consistency in reporting. For report on Portugal, Altamiro da Costa Pereira provided information on policies and initiatives and examples for specific applications. He is a Professor at the Faculty of Medicine, University of Porto, where he runs the Department of Biostatistics and Medical Informatics⁹ and the Centre for Research in Health Technologies and Information Systems¹⁰. Relevant information on policy contexts and health system situation, policies and initiatives as well as examples for specific applications was collected by the overall project lead - empirica in Bonn, Germany.

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

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

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

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

⁹ Biostatistics and Medical Informatics , <http://sbim.med.up.pt>

¹⁰ Centre for Research in Health Technologies and Information Systems , <http://cintesis.med.up.pt>

possible when comparing developments in different countries, in spite of the well-known 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 Portugal 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.

1.3 Outline

At the outset and as an introduction, the report provides in chapter 2 general background information on the *Portuguese* 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 introduction¹¹

Portugal has been a Parliamentary Republic since 1974, and joined the European Community in 1986. The country is administratively divided into eighteen districts with 308 municipalities including two autonomous regions (Azores, Madeira). Both central government and local authorities (municipalities) are responsible for delivering public services; responsibilities may differ depending on the type of service. However, as is the case for most EU Member States, the main driver for eGovernment initiatives is the central government.

The Portuguese healthcare system is characterised by three coexisting, overlapping systems: the NHS; special public and private insurance schemes for certain professions (health subsystems); and private voluntary health insurance (VHI).¹² The health system in Portugal is a network of public and private healthcare providers, each of them connected to the Ministry of Health and to the patients in its own way. The Ministry of Health is coordinating all healthcare provision and the financing of public healthcare delivery. Most of the population is entitled to choose among (or can use both) two healthcare insurers: NHS and VHI. Part of the population, approximately 20–25%, are also covered by a health subsystem, which means that they have a third option for the choice of care, although financing of the health subsystem is compulsory for their beneficiaries (as it is occupation-based health insurance).

The providers can be either public or private, with different agreements with respect to their financing flows, ranging from historically based budgets to purely prospective payments. Out-of-pocket (OOP) payments make for a significant portion of the financial flows. Only capitation payments are, at least for the moment, absent from the financial arrangements.¹³ The following box summarises the key facts about the Portuguese healthcare system:

Key facts about the Portuguese healthcare system:¹⁴

Life expectancy at birth: 78.3 years

Healthcare Expenditure as % of GDP: 9.9% (OECD 2007)

WHO Ranking of Healthcare systems: rank 12

Public sector healthcare expenditure as % of total healthcare expenditure:
71.5% (OECD 2007)

¹¹ eUser 2005

¹² Barros and de Almeida 2007, p.13

¹³ Barros and de Almeida 2007

¹⁴ Data from World Health Organization 2000; Health Consumer Powerhouse 2008; World Health Organization 2009

2.2 Healthcare governance¹⁵

Decision making bodies, responsibilities, sharing of power

The central Government, through the Ministry of Health, is responsible for developing health policy and overseeing and evaluating its implementation. Its core function is the regulation, planning and management of the NHS. It is also responsible for the regulation, auditing and inspection of private health services providers, whether they are integrated into the NHS or not. Azores and Madeira as autonomous regions have their own healthcare systems. The National Health System (Serviço Nacional de Saúde – SNS) has jurisdiction only on Portuguese mainland. In general, the creation of new posts within the NHS requires the approval of the Ministry of Finance. The Ministry of Finance presents a project for inclusion within the state budget, which also includes the NHS budget based on a proposal submitted by the Ministry of Health, for government approval. The state budget is discussed and approved afterwards in Parliament. The Ministry of Finance also sets the budget for public subsystems. An exception to this rule are the hospitals EPE (Entidade Pública Empresarial) that can support individual contracts inside a pre-negotiated budget for human resources, they have the freedom to hire medical personal, without the need of finance approval.

The Family Health Units (USF) that have been established, are based on a new primary healthcare providers management model that is supported by ICT and that uses a set of indicators for evaluating the healthcare provided and the unit performance as the basis for their financing. Regional Health Authorities have the mission is to assure the people of each region access to healthcare of quality, adjusting the available resources to the needs in health, ensuring adequate coordination between the services providers of care. For the purposes of healthcare provision, boundaries are based on geographical proximity rather than administrative areas, so the definition for the purposes of the Ministry of Health is not exactly coterminous with administrative boundaries. There are a number of initiatives being undertaken in cooperation with the municipalities, mainly in promoting health styles and preventing disease, rather in providing healthcare, but the role of municipalities in the Portuguese health system is rather marginal, has they do not have responsibilities in health policies.

Almost three decades after the inception of the NHS in Portugal, the historical remnants of the pre-NHS social welfare system still persist in the form of health insurance schemes for which membership is based on professional or occupational category. These are often referred to as health “subsystems” (subsistemas). In addition to the health insurance coverage provided by the NHS, approximately one third of the population is covered by the health subsystems and/or private health insurances.

Healthcare service providers

Portuguese primary healthcare is delivered by a mix of public and private health service providers. This network incorporates PCCs¹⁶ integrated in the National Health System, private sector primary care providers (both non-profit-making and profit-making) and

¹⁵ Oliveira and Pinto 2005

¹⁶ Patient Care Components

professionals or groups of professionals in a liberal system with which the NHS contracts or develops cooperation agreements.

GPs and family doctors – working in the health centres or in the PCC setting – deliver most primary healthcare in the public sector. On paper, GPs act as gatekeepers so there is no direct access to secondary care. In reality, many people go directly to the emergency department in hospitals if they have any acute symptoms. It is estimated that approximately 25% of the attendees at hospital emergency units do not need immediate care. Those patients who are covered by the health subsystems can go directly to private hospitals and specialists approved by their schemes. Private physicians can also refer them to NHS hospitals.

Secondary and tertiary care is mainly provided in hospitals, although some health centres still provide specialist ambulatory services. There is an uneven distribution of health resources between the regions, however, hospitals in rural/inland areas have benefited from a programme of additional investments in recent years.

Central hospitals provide highly specialised services with advanced technology and specialist human resources. District hospitals are located in the main administrative district and provide range of specialist services. District level-one hospitals – that only provide internal medicine services, surgery and one or two other basic specialties – are now disappearing as isolated institutions and are being incorporated in models of ‘hospital centers’. In fact, the joining of two or more hospitals can provide the possibility of reducing costs, increasing managing potential, allow specialization of structures and professionals, and opens the possibility of the doctors that belong to the main hospital could perform medical appointments and ambulatory surgery in the small unit, with enormous advantages for patients in terms of proximity of delivering healthcare.

The figure below summarises the main features of the Portuguese primary healthcare organisation:

Figure 1: Important features of primary healthcare organisation in Portugal

Political/administrative unit responsible for primary healthcare	The entity responsible for primary healthcare is the Ministry of Health through regional health administrations.
Consumer Choice	In theory, the patients have a free choice of GP, but as the number of available GPs is small, in practice the choice is somewhat restricted.
Financing	In Portugal, the healthcare system is mainly provided by the national health service (SNS), which is tax-based. However, there are other complementary providers that may be financed by other sources such as individual health plans.
Public or private providers	The vast majority of GPs are publicly employed and only a very small fraction works exclusively in private practices. However, many GPs work both in public and in private practices.
Gatekeeping function of the GP	The GPs have a gate keeping function as they are the first contact point before a patient consults a specialist.
Integrating health: initiatives for coordination	In Portugal all citizens have coverage regarding healthcare, including primary and secondary care, provided by the national government. In addition, some have complementary individual health plans paid by themselves.

2.3 Recent reforms and priorities of health system/public health

Currently ongoing reforms in the health and social care systems

In Portugal, the recent past has been characterised by the introduction of a number of reform initiatives: There are broadly five different areas of intervention, which have been highlighted:

- [1] health promotion,
- [2] long-term care,
- [3] primary and ambulatory care,
- [4] hospital management and inpatient care,
- [5] and the pharmaceutical market.

In 2003 the Portuguese government for the first time expressed its objective to use ICT to place the citizen at the centre of the health system. Ever since that goal was included in the National Action Plan for Information Society eHealth has been considered a national priority. The National Health Plan (2004–2010) furthermore provides a roadmap for public health actions, usually under special programmes, to address general population health concerns. As the main areas for attention, the Plan has chosen cardiovascular diseases, oncology, mental health, health of older people, HIV/AIDS and health promotion, among

others. There is a set of specific targets, and responsibility for monitoring progress towards these targets rests with the ACS¹⁷.

Hospital care has been subject to two sorts of reforms. On the one hand, there has been a redefinition of the existing NHS supply of hospital services. On the other hand, changes have been made to the public hospital model, namely to management rules and the payment systems. On the first issue, three high visibility measures have been taken: closing of several hospital maternity departments (although obstetric consultations and antenatal care do continue to take place at those hospitals), based, according to official documents, on clinical safety criteria; putting two (or more) nearby hospitals under the same management team; and announcement of new hospitals to be built.

Another line of reform is related to the way the Ministry of Health establishes the payment to the NHS hospitals. The main element of that reform was the change in statutes of hospitals, providing them with corporate-like statutes. The reform was implemented on 1 January 2003 for roughly half of the hospitals, and has been extended to other hospitals over the years. In the first phase, the hospitals were considered to be a public company, with capital provided solely by the Government, and were named “Hospitais SA”. To make it clear that privatisation of hospitals was not on the political agenda, they were later changed to public enterprises (“Hospitais EPE”). The hospitals that did not go through this transformation process continue to be managed by civil service rules (and are known as “Hospitais SPA”).

Over time, more hospitals have been transformed from “SPA” to “EPE” status, including some of the largest hospitals in the country (Hospital de Santa Maria, in Lisbon; Hospital de São João in Oporto). The main objective of the reform was to provide autonomy and management accountability to hospital boards. This was part of a general trend towards an effective purchaser–provider split. The next step has been the introduction of explicit contracting of services to be provided by hospitals, which is to be carried out in 2007 for both “Hospitais EPE” and “Hospitais SPA”.

The two other most important reforms of the Portuguese healthcare system are in the primary care – with the creation of ‘Familiar Health Units’ grouped into ACES (Agrupamentos de Centros de Saúde), which are responsible for a group of families and contract with the Regional Health Authorities a list of indicators and goals and can receive additional payments – and the long-term care. The latter reform, launched in 2006, created a new network of care –including public and private institutions – that received patients from hospitals and primary care for periods that range from 30 days to more than 90 days. The network also has the function of rehabilitating and preparing the insertion of patients into their families and has a budget that comes directly from the social games (not an NHS budget).

A final area of reform to be discussed was the pharmaceutical market. Interventions have occurred both at the level of regulated prices and margins, and in ownership and entry rules. Several changes in price and margin regulation have been introduced in recent years: reduction in co-insurance rates by the NHS, administrative reduction of prices (6% both in 2006 and 2007) and administrative reduction of retail margins.

¹⁷ Alto-Comissariado da Saúde (High Commissioner of Health)

Another major reform in the Portuguese health system was the creation of the HRA (Entidade Reguladora da Saúde - ERS) in 2003. At the root of the creation of this body was the concern, at the time, about the effect of private management in PCCs (in the sense that application of the new law governing PCCs management was made conditional on the existence of such an agency). The first year of the new HRA was essentially dominated by the uncertainty about its role, and disputes about funding and location. The resignation of its first president opened the way for a rethinking of the intervention of the HRA, which in 2006 started to issue recommendations and proposals.

On the 19th of February 2010 the Portuguese Ministry of Health presented their Plan of Operationalisation for the Electronic Health Record¹⁸. The Operationalisation plan carries out the decision taken in section 3 of the Order No. 27311/2009 of 21 December 2009 to “ensure that by the end of 2012 all Portuguese have an electronic health record”. The development of an EHR must allow health professionals to provide their services in an appropriate manner independent of place and time and must allow the patient to have his clinical information available at all times. Furthermore the EHR should reduce the costs of healthcare by significantly improving information management, by avoiding repeated actions and by supporting policy making at various levels.

2.4 ICT use among general practitioners

This section provides a brief overview of relevant ICT related infrastructure and services data. It draws on earlier studies commissioned by the EC, notably the Indicators eHealth Study . Although the results of this study date from 2007 and may therefore not reflect latest changes, a more recent pan-European survey is not available¹⁹.

In terms of infrastructure, 88% of the Portuguese GP practices use a computer and 65% of GP practices dispose of an Internet connection. In Portugal, broadband connections have not yet arrived in force; they are used in only 32% of GP practices.

The storage of electronic patient data is not very common in Portugal. Only around 60% of GP practices store at least some sort of individual medical patient data.

A computer is available in the consultation room of 77% of the Portuguese GP practices. 63% of Portuguese GPs actually use this computer for consultation purposes when the patient is present, for example to display a patient's file to the practitioner, to explain medical issues to the patient by means of a photo or animation but also to run a decision support system helping in diagnosis or prescribing. 53% of the Portuguese GP practices use a Decision Support System for diagnosis or prescription purposes.

The electronic exchange of patient data was, in 2007, done on a local level. Only 6% of Portuguese GPs exchange administrative data with other care providers. With only 5% of Portuguese GP practices exchanging administrative data with reimbursers.

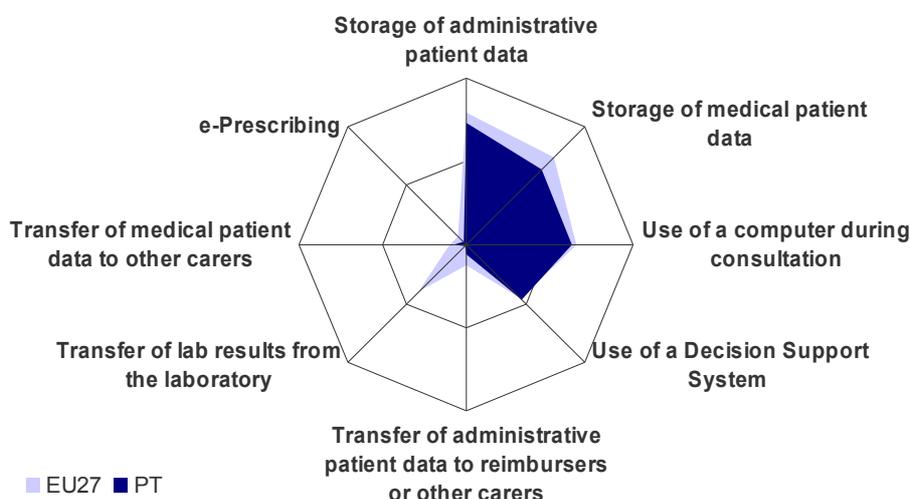
The situation for the transfer of medical patient information is similar: Only 1% of GP practices use network connections to receive results from laboratories.

¹⁸ Ministério da Saúde [Ministry of Health] 2010

¹⁹ ICT and eHealth use among General Practitioners in Europe 2007

The electronic exchange of prescriptions, commonly referred to as ePrescription, is used by 2% of GP practices in Portugal.

Figure 2²⁰: eHealth use by GPs in Portugal



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

3 eHealth strategies survey results

The following sections present the results of the eHealth Strategies country study. In a first section, the eHealth policy actions undertaken in Malta 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 sections, 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.

²⁰ 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.

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

In June 2009, the Portuguese governmental agency ACSS (Administração Central do Sistema de Saúde) published a policy paper, which was open for discussion. It describes the functional and technical specifications of a national electronic health record (Registo de Saúde Electrónico – RSE) and was initially created on behalf of the current Health Secretary of State Dr. Manuel Pizarro (Secretário de Estado da Saúde – SES). The final version of the document was published in February 2010.

Strategy for National Electronic Health Records 2009 (discussion paper)

The document was developed during a series of meetings involving over 30 representatives from public health and regional health administrations, public and private hospitals, primary care, professional associations and universities. These stakeholders engaged in issues, such as the health system’s architecture, information model, ontologies and terminologies, security and privacy, as well as governance.

Overall, the document is an initial attempt to convey a wide consensus among these groups on the definition of a national electronic health record, including patient summary and a roadmap to achieve this goal. And although this discussion paper is not a legislative act, it can be considered as the main policy paper issued by a public body.

In November 2008, the government presented – to a national advisory board – a strategic technological plan (Plano Tecnológico da Saúde – PTS), which defined the main goals of the governmental policy for the eHealth domain. This plan can be seen as a complement to the existing EHR discussion paper.

Renovation of Plan for Health Information System (2007)

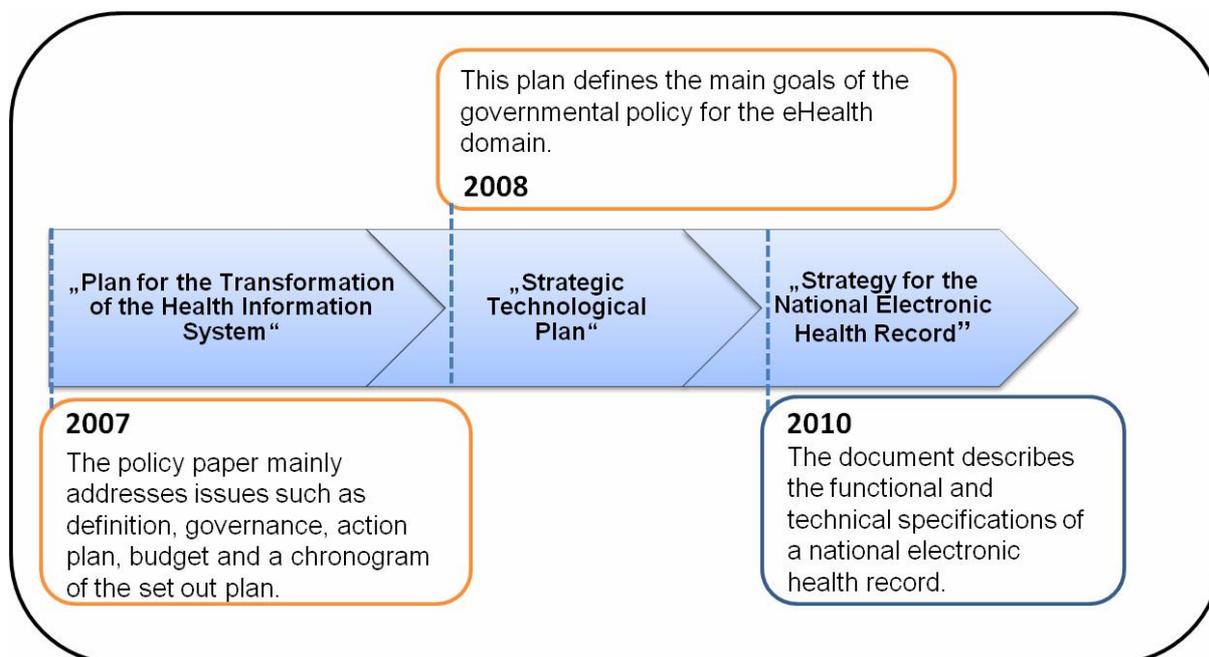
A previous document, which is concerned with eHealth issues, is the “Transformation Plan for Health Information Systems”²¹ in Portugal from November 2007. This policy paper was also published by the ACSS, but has been elaborated by the consultancy agency “PriceWaterhouseCoopers”²². It was originally initiated by Carmen Pignatelli, the former Health Secretary of State. The paper mainly addresses issues such as definition, governance, action plan, budget and a chronogram of the set out plan.

Although this earlier document may still be politically and technically valid, some of its milestones and deadlines have not been met. In addition, the new Health Secretary of State commissioned to a wider group of stakeholders a complementary policy document (mentioned above) mostly centred around the definition of a national electronic health record.

²¹ Plano de Transformação dos Sistemas de Informação Integrados de Saúde (PTSIS)

²² PricewaterhouseCoopers

Figure 3: Portuguese Policy documents related to eHealth



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3.2 Administrative and organisational structure

In 1980 the national health informatics department (Serviço de Informática da Saúde – SIS) was created by the Ministry of Health, with three operational centres at regional level (Centro Regional de Informática do Norte – CRIN, Centro Regional de Informática do Centro – CRIC, Centro Regional de Informática do Sul – CRIS). In 1990 reorganisation took place and SIS gave way to another health informatics service (Serviço de Informática do Ministério da Saúde – SIMS) with administrative and financial autonomy. Later on, in 1993, following a restructuring of the Ministry of Health, SIMS and the Department of Financial Management for Health Services (Departamento de Gestão Financeira dos Serviços de Saúde) were extinguished and a new department of the Ministry of Health was created: the Institute for Financing and Informatics Management of Health (Instituto de Gestão Informática e Financeira da Saúde – IGIF).

Administração Central do Sistema de Saúde – ACSS

More recently, in 2007, IGIF evolved into an integrated administration agency of the Ministry of Health, the Central Administration for Health System (Administração Central do Sistema de Saúde – ACSS²³), which is currently responsible at the national level for all matters concerned eHealth, except health informatics standards²⁴.

ACSS is a national body, depending on the Ministry of Health, whose mission it is to manage the human, financial, estate plus equipments, information systems, technology and communication resources for the SNS - Serviço Nacional de Saúde (National Health

²³ Administração Central do Sistema de Saúde

²⁴ For standards, the Instituto Português de Qualidade – IPQ (a public institute under the Portuguese Ministry of Economy and Innovation) is responsible.

Service) promoting good practices and quality healthcare services throughout the SNS institutions. ACSS must define policies, regulation and health planning in cooperation with Regional Health Authorities. With regard to ICT concerns, ACSS is designated to build the core health information model, as well as, the methodologies, standards and technical specifications to grant interoperability and interworking among health information systems. It is also committed to design, build and implement a certification process appealing to accredited and certified national institutions and laboratories. The Information System Architecture, including governance models for applications, technology and infrastructures, is also a competence ACSS has to deploy as well as propose, develop and implement the ICT governance model for the SNS. It is mainly financed by the government budget (Orçamento do Estado). In addition, specific eHealth projects presented by the ACSS are also financed within the framework of EC funds (e.g. former Programa Operacional da Saúde – Saúde XXI and current Quadro de Referência Estratégico Nacional – QREN 2007-2013).

Thorough stakeholder involvement in EHR initiative

So far, no formal involvement of different stakeholders in the development of eHealth has been done, at national level. At regional level the Rede Telemática da Saúde - RTS²⁵ was developed. This project implemented a telematics health network, in the Aveiro region, to improve clinical communication and interaction between healthcare institutions (2 Hospitals and 9 Health Centres). It implements a Regional Electronic Health Record guarantying both information systems independence and electronic security in a distributed model, i.e. patient information is located at the point where it is created, therefore there is no central database. This system is approved by the National Data Protection Authority.

In the recent initiative on EHR systems (“Registo de Saúde Electrónico – RSE”), over 30 representatives from public and regional health administrations, public and private hospitals, primary care, professional associations and universities were conveyed by the Health Secretary of State to discuss and present a proposal aiming at the creation of a national electronic health record. Most of these representatives were selected on the basis of their expertises. Furthermore, some temporary working groups and informal consultations exist in Portugal.

Challenging for the administrative infrastructure is the fact that despite recent initiatives, there is still a lack of clear commitment and leadership at the top political and managerial levels, which is expressed in a lack of recognition (by both health managers and health professionals) of the role of eHealth in the healthcare domain. There is also a need for a continuing strategy both at national and regional levels.

It is said that the creation of a specific competence centre on the eHealth field should be appropriately addressed involving experts from health institutions and academia. This also applies to the current communication infrastructure (Rede Informática da Saúde - RIS) of the Portuguese National Health Service together with the widely used clinical applications SAM and SAPE (created and owned by the Ministry of Health, see also 3.7), as they are said to be in need of upgrading.

²⁵ Rede Telemática da Saúde [Health Telematic Network] 2010

3.3 Deployment of eHealth applications

3.3.1 Patient summary (EHR)

In this study, the epSOS project's definition²⁶ 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 Andalusia 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.

In Portugal, at the present stage the patient summary is developed in the scope of RTS, The "Rede Telemática da Saúde" project (RTS) developed and implemented therefore a telematic health network, enhancing the clinical communication and interaction between healthcare institutions. Project partners included several hospitals, governmental bodies and a university as technical partner. The project combines a professional and a patient portal in order to secure and smooth the access to health information available from different healthcare providers.

If approved epSOS II proposal, RTS will be used as a test bed for the Portuguese pilot site, with the aim of evolving the already existing platform connecting primary and secondary healthcare institutions and evolve to be compliant with the epSOS services being also a test site for the future national EHR (RSE) with the target of cross-border interoperability.

Since 2009 a national EHR system (RSE) has been in planning, which will include a basic patient summary. Since then, there are some local pilots ongoing on this matter, involving both hospitals and primary care settings. The patient summaries piloted include the following data:

²⁶ European Patients Smart Open Services

Data stored for planned patient summary:

- Administrative/ demographics
- Electronic medication record
- GP record/summary
- Medical history
- Discharge letter
- Laboratory results

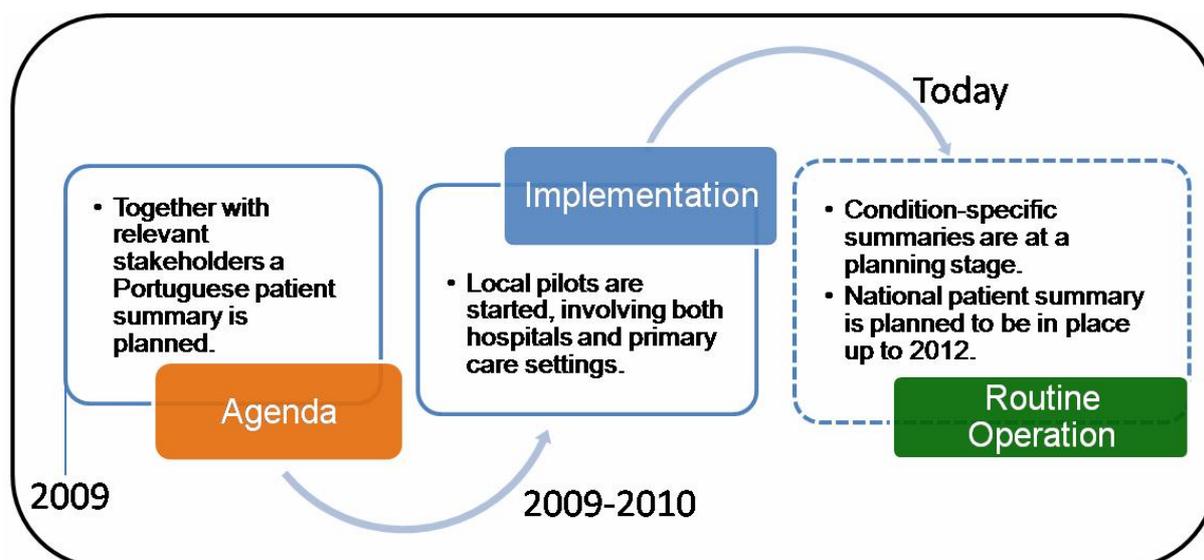
Planned national patient summary (“Registo de Saúde Electrónico”)

Furthermore, a national patient summary (Registo de Saúde Electrónico - RSE) is planned as described in chapter 3.1. This RSE will include variables such as patient ID with demographic and administrative data, clinical alerts (e.g. allergies, chronic diseases or implants), utilisation of healthcare services, vaccines, prescription data, lab results, and a list of problems or diagnoses. It is planned to in place up to 2012, according to recent government plans from February 2010.

Condition-specific summaries are also in planning, though there are a few multi-centred disease-specific registries with a nation-wide coverage. These are either based upon specific professional/scientific projects (e.g. inflammatory bowel diseases or diabetes) or still at a piloting stage (e.g. blood donors' registry).

Concerning patient summaries in Portugal, there are technical and conceptual challenges, such as the definition of an adequate information model. In addition, although there have been some relevant political initiatives recently, an adequate governance model and a stronger leadership is currently not in place. To resolve these issues, it is said that relevant stakeholders should be more involved and the needed financial resources may not be present due to the current economical crisis. Lastly, a recurrent problem is the lack of a specific competence centre on the eHealth domain at a national level. The existing centre ACSS lacks a number of specific expertise (namely regarding eHealth technologies). In addition, changing policy priorities have led to problems. For example, during a certain period ACSS has promoted the "in-house" creation of national electronic health records (e.g. SONHO, SAM, SAPE, SINUS) but latter on changed its policies. The upgrading of these systems to meet new needs and standards presents for many hospitals and health centres a costly challenge.

Figure 4: Patient summary in Portugal



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3.3.2 ePrescription

In the framework of this study and following work in epSOS²⁷, 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.

Local ePrescription with national drug database

In Portugal, most hospitals and health centres have had electronic applications for prescribing since 2004²⁸, which allow doctors to issue a prescription using a computer with access to a local or national drug database. These prescriptions are electronically sent to a national database for invoicing control purposes. Most pharmacies also have access to specific applications to electronically register the delivery of a drug.

However, there is no eTransmission of prescription from doctor to pharmacy or no medication record for the patient (except at a local level) and only very basic decision support tools in place. Currently, in the northern region, 95% at least use the computer for prescription and around 60% of the hospitals are choosing the computer over hand-written prescriptions. Currently, 64% of prescriptions are produced by informatics applications.

At regional level, there are ePrescription pilots ongoing. For example in Madeira, which started in 2007 and aims to include around 500,000 users. Madeira has 60 public health

²⁷ European Patients Smart Open Services

²⁸ Administrative Order n.º 711/2007, 11 June 2007 and RCM n.º 96, 27 July 2007 authorise all the national health services to launch public tenders in order to buy informatics systems for electronic prescriptions, invoicing and administrative management. Although, the system to support the physician daily activity (Sistema de Apoio ao Médico – SAM), application developed by ACSS is in field in Hospitals and Healthcare Centres since 2004.

centres, one public hospital and 59 pharmacies. Thereby a pharmacy computer system has been developed, which connects pharmacies and hospitals.²⁹ A new pilot is being previewed till the end of 2010.

The main challenges for the implementation of ePrescription in Portugal are of technical, organisational and political nature: The former mainly relates to the needed improvement of the communication network (Rede Informática da Saúde - RIS), which is said to be fairly outdated. In addition, there is a need to certify all ePrescription solutions in the market in order to ensure their interoperability.

Since 2006, all market applications for electronic prescribing have been certified by ACSS in order to verify its conformity with legal requirements. Recently, ACSS has been developing a new certification process to ensure the interoperability of ePrescription applications with the national systems of reference and other quality requirements. This process will be in operation from September 2010.

From an organisational point of view, there is no drug database at a national level (e.g. including drug identifiers, recommended doses, interactions and adverse drug reactions data) that ePrescription solutions could use in order to implement clinical decision support systems.

Finally, at the political level there is a need to improve the relationship between the Portuguese National Health Service (Serviço Nacional de Saúde - SNS) and the pharmacies associations (Associação de Farmácias de Portugal - AFP³⁰ and Associação Nacional de Farmácias – ANF³¹) so that all SNS users may profit from the systems already deployed by those associations in most of the Portuguese pharmacies.

3.3.3 Standards

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

Instituto Português de Qualidade is in charge

As mentioned in section 3.2, the Portuguese administration agency of the Ministry of Health (ACSS) is not responsible for health informatics standards. Here, the department of the National Ministry, Instituto Português de Qualidade – IPQ (a public institute under the Portuguese Ministry of Economy and Innovation) is in charge. It is the official entity for standardisation and quality and it supervises different standardisation bodies, which deal with particular standards.

The Instituto de Informática – II (a central administration service from the Portuguese Ministry of Finances) is the standardisation entity in the specific domain of the information and communication technologies (including, at least theoretically, the health informatics

²⁹ i2-Health project 2006

³⁰ Associação de Farmácias de Portugal [Association of Pharmacies in Portugal] 2010

³¹ Associação Nacional de Farmácias

standards). This institute participates in several European and international initiatives such as the CEN/TC 251³² and the ISO/TC 215³³.

Despite this shared responsibility in the field of standards, the ACSS (the governmental agency dealing with all aspects of the administration of the Portuguese National Health Service) is also planning to be involved in the field of health informatics standards by integrating a technical committee specifically concerned with medical informatics: “Comissão Técnica de Informática Médica – CT 119”.

Finally, other organisations – such as the Portuguese Central Health Authority (Direcção Geral de Saúde – DGS³⁴) and the entity for national statistics (Instituto Nacional de Estatística – INE³⁵) – are also concerned with these matters either as governmental agencies or as end users.

In general, Portugal or rather the national standards authority IPQ is a member of the following international organisations:

Memberships of the Portuguese standards authority (IPQ):

- European Committee for Standardization (CEN)
- European Committee for Electrotechnical Standardization (CENELEC)
- International Electrotechnical Commission (IEC)
- Conference General des Poids et Mesures (CGPM)
- International Organisation for Legal Metrology (OIML)
- International Organization for Standardization (ISO).

So far there are no plans at that time for Portugal to become a member of the IHDTSDO.

International standards currently used in Portugal are:

- Since 1989, ICD-9³⁶ has been officially adopted by the Ministry of Health to be used in public hospitals (from the Portuguese National Health Service – SNS) for coding of morbidity statistics and reimbursements, namely through the DRGs system;
- In 1997, the Statistical Council (Conselho Superior de Estatística), from the Ministry of Infrastructure, Planning and Territorial Administration also adopted the ICD-10 for the coding of mortality statistics;
- The Portuguese version of the International Classification for Nursing Practice – ICNP (Classificação Internacional para a Prática de Enfermagem – CIPE) is also being currently and widely used in software applications within the SNS.

More recently, the RSE working group proposed the ICD-10-CM & PCS (ICD-10 Clinical Modification & Procedure Classification System) to be used in the newly planned national electronic health record (see section 3.1).

³² European Committee for Standardisation

³³ International Organization for Standardization

³⁴ Ministerio da Saúde

³⁵ Instituto Nacional de Estatística

³⁶ International Classification of Diseases, 9th Revision, Clinical Modification

Although not officially, the industry and healthcare institutions are adopting DICOM (for imaging) and HL7 (for messaging) as de facto standards.

Organisational and technical obstacles hinder the deployment of standards: Firstly, there is a lack of national leadership in this domain and an urgent need for clarification of the role of the ACSS and its interaction with the other competent authorities. Secondly, as there is a large number of legacy information systems (specially in hospitals), there is also an increasing need for certification activities and investment in middleware and training of specialised personnel to assist the design of the architecture of the existing and new health information systems. Another difficulty is the fact that an established information model for standards is still missing.

3.3.4 Telemedicine

The use of telemedicine applications is recognised as beneficial to enable access to care from a distance and to reduce the number of GP visits or even inpatient admissions. Commission services define telemedicine as “the delivery of healthcare services through the use of Information and Communication Technologies (ICT) in a situation where the actors are not at the same location”³⁷. 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 delivery³⁸.

Routine telemedicine projects in the fields of cardiology, radiology and dermatology

Basically, there is no national initiative in place for the use of telemedicine, but there are many local and regional telemedicine activities, which evolved over the years from the initiatives of a few hospital clinicians. Examples of telemedicine projects running by routine can be found in the fields of cardiology, radiology and dermatology, involving both primary and secondary care, since the middle of 90's. Furthermore, there are some international projects with a good potential to grow in the near future, mainly involving the North of Portugal and Galicia and between Portugal and some Portuguese speaking African countries (e.g. Angola, Mozambique, Cabo Verde and Guiné-Bissau).

At the national level, there is a widely used call centre service (Linha Saúde 24 – S24). The S24, an initiative of the Ministry of Health, provides screening, counselling and referral in case of illness by phone or via chat to people with special needs. It provides also assistance on matters relating to medication and intoxication and gives general health information, including the location of health facilities within the network of the National Health Service, as well as pharmacies.

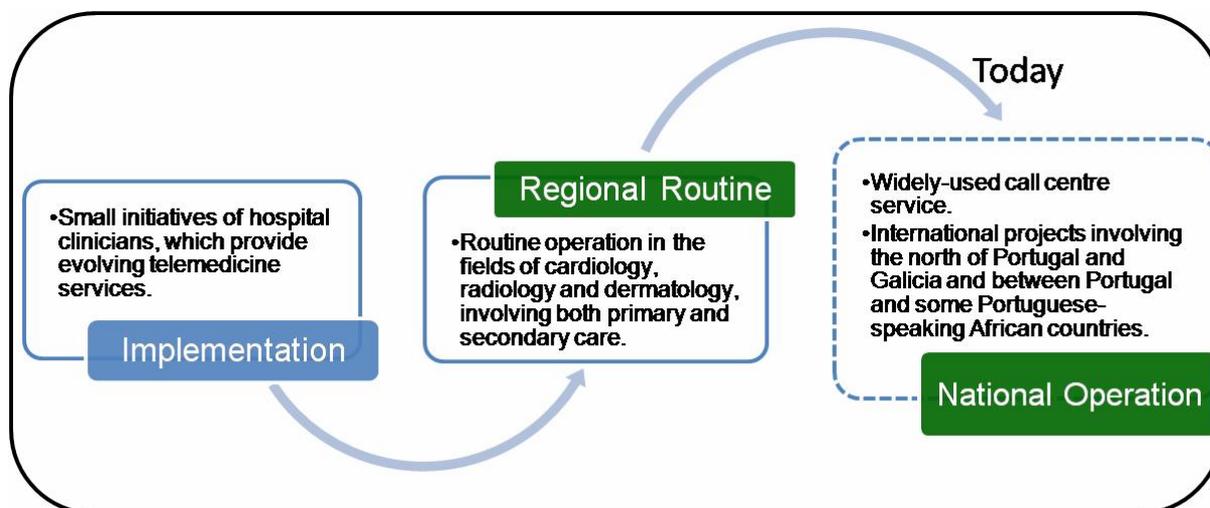
There are technical and financial challenges. Technically, the main problem is the strongly needed update of the current communication infrastructure (as already mentioned in section 3.3.2). Financially, although a recent law allows already the reimbursement of the two health institutions involved (see section on legal and regulatory facilitators 3.5), typically a hospital and a health centre, many other telemedicine services are not yet covered by health insurances. In addition, there is an increasing need for the

³⁷ Europe's Information Society

³⁸ European Commission 2008

evaluation of specific telemedicine projects in order to make better investments (cost-benefit analysis) and improve the usability of such systems to both patients and doctors.

Figure 5: Telemedicine services in Portugal



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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 Portugal and for which purpose.

3.4.1 Unique identification of patients...

Since 2008, Portugal is rolling out an eID which is connected to a Citizen Card (Cartão do Cidadão). The eID is mandatory for all Portuguese citizens from the age of 6 and up, but substitutes five other cards, previously issued separately:

- ID card (Bilhete de Identidade)
- National Health Service (SNS -Serviço Nacional de Saúde) card (Cartão do Utente)
- Tax payers card (Cartão do Contribuinte)
- Social security card (Cartão da Segurança Social)
- Electoral card (Cartão de Eleitor)

The National Health Service Card (Cartão do Utente), which was previously used for health purposes has been mandatory since 1997 under the axiom: "one patient – one number", it is a plain card with a number and an identification of the citizen and is now being replaced by the eID. Due to constitutional restraints, however, the adoption of one unique citizen's number is not allowed. The Portuguese eID will therefore only assemble the five different numbers in one unique card.



There are two legal acts connected to the deployment of the Citizen Card: First, there is the “Law on the Healthcare User Card”³⁹ from 1997 and the “Law on the Citizen Card”⁴⁰ from 2007.

The registry for the patient ID (Registo Nacional do Utente – RNU) is maintained by the National Health Service (Serviço Nacional de Saúde - SNS) in a centralised manner. It lists all users with data regarding patient’s identification and address and a few other variables concerning his/her relationship with the SNS such as: healthcare insurance status, social benefits (e.g. exemptions from paying some drugs or health services) and attending health centre. The card does not contain any medical information.

3.4.2 Unique identification of healthcare professionals

In a strict sense, there is no health service professional ID in Portugal. But some health professionals such as physicians, pharmacists, dentists and nurses – are regulated by professional associations such as Ordem dos Médicos, Ordem dos Farmacêuticos, Ordem dos Médicos Dentistas and Ordem dos Enfermeiros, respectively. In order to be able to practice registry is mandatory for all these professionals. Following their registration ID numbers and cards are issued by their specific professional association. Technical Diagnostic and Therapeutic professionals also, to practice, need to be registered at ACSS, which issues a card with a unique identification number.

Some health professionals have an ID by professional associations

Such a registry⁴¹ is held by the above mentioned medical association “Ordem dos Médicos” for physicians, for other professionals, the registry is held by their respective Order, except for the Technical Diagnostic and Therapeutic professionals, whose registry is held by ACSS. The private database of Ordem dos Médicos contains information about the diploma and specialisation of a healthcare provider and is used both for the identification of doctor’s activity and for public consultation⁴², in particular their practice with the SNS (e.g. prescriptions or medical certificates). This means that an online service is provided, which allows anyone to identify a registered doctor. The registration is a mandatory requirement imposed by the Order of Physicians⁴³.

However, there's no central or unique health professional's register but this problem is planned to be solved with the introduction of the Health Professionals National Registry (Registo Nacional de Profissionais - RNP), similar to the RNU (patient's registry, see 3.4.1), which has been proposed a project: under the Transformation Plan for Health Information Systems (PTSIS). Development of such a register needs to be yet more acute and relevant, taking into consideration the recently planned National Electronic Health record⁴⁴ (Registo de Saúde Electrónico - RSE).

³⁹ Ministério da Saúde 1997

⁴⁰ Assembly of the Republic

⁴¹ Ministério da Saúde [Ministry of Health] 2010

⁴² The public register is available at: Ordem dos Médicos [Medical Association] , <https://www.ordemdosmedicos.pt/?lop=listamedicos>

⁴³ Article 2 of the Rules of Entry in the Order of Physicians (Regulamento de inscrição na ordem dos médicos) in accordance with article 57.º b) and article 64.º j) of the Statute of the Medical Association (Estatuto da Ordem dos Médicos).

⁴⁴ see 0

3.4.3 The role of eCards

The Citizen Card, which has been explained above (3.4.1), is mandatory and centrally issued, digital identification card based upon a smart card with digital signature and authentication capabilities, including two key pairs. These keys are managed by a government PKI⁴⁵, holding a unique system identifier. It also provides a Machine Readable Zone (MRZ).

Roll-out of an eID in connection to a Citizen Card

In general, the eCard is a smart card with several security and anti-counterfeiting features – including the key infrastructure mentioned above. Visually it has a photo of the according citizen, a digitalised hand-written signature, optical variable link markings, multiple laser image of the citizen and a diffractive optically variable image devices. The smart card itself is signed by the state certificate authority.

As far as the chip is concerned, which is CC EAL5+⁴⁶ compliant, there are fingerprints stored and firmware for comparison (that may only be accessed by official entities, such as police, and does not permit direct reading of fingerprints), a PIN protected PKI key pair for authentication, a PIN protected PKI key pair for digital signature and a PIN protected address (the private keys are never used outside the chip processing units/software). Its electronic key pairs are RSA 1024 bit⁴⁷. It also has firmware for one-time password generation (for authentication over telephone, for example. In sum, the Portuguese Citizen Card is a versatile password protected token⁴⁸.

Taken advantage from these security mechanisms, the eCard holds a number of variables such as.

⁴⁵ Public Key Infrastructure (PKI)

⁴⁶ Common Criteria Evaluation Assurance Level 5+

⁴⁷ RSA (which stands for Rivest, Shamir and Adleman who first publicly described it) is an algorithm for public-key cryptography, which is usually 1024–2048 bits long.

⁴⁸ More information at: Cartão de Cidadão, http://www.cartaodecidadao.pt/index.php?option=com_content&task=view&id=19&Itemid=26&lang=en

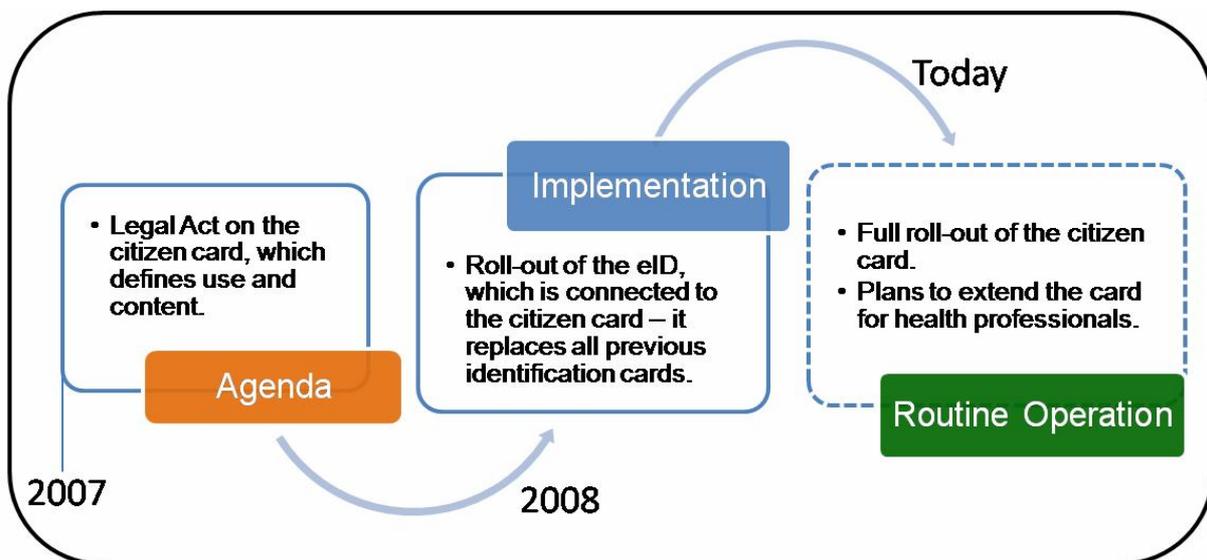
Information on the Portuguese eCard:

- ID number
- Name
- Date of birth
- Gender
- Height
- Nationality
- Expiry date
- Parent's names
- Patient number
- Tax payer's number
- Social security number
- Electoral number

In addition, the eCard gives access to other personal data that is stored in a national registry (see 0 for the RNU) such as: complete identification including demographics, health insurance details, health centre, family doctor, status regarding prescription reimbursements and healthcare invoicing.

An eCard for health professionals is in planning, as the upcoming citizen card is foreseen to be expanded for professionals.

Figure 6: eCards in Portugal



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3.5 Legal and regulatory facilitators

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

Although there is no specific law enacted in Portugal with respect to the creation of a national/regional electronic patient record, there is a generic law on data protection (Lei 67/98 - Lei da Protecção de Dados Pessoais⁴⁹) and another specific to genetic data (Lei 12/2005 - Informação genética pessoal e informação de saúde⁵⁰).

The Personal Data Protection Law was enacted in 1991 and is very similar to the European directive. The processing of personal sensitive data – which includes health data – is prohibited except if permitted by a legal provision or on the authorisation of the National Data Protection Authority (Comissão Nacional de Protecção de Dados – CNPD).

Generic legislation on reimbursing tele-consultation services

The CNPD - the Comissão Nacional de Protecção de Dados⁵¹ - regulates all issues related to data protection, including clinical data. CNPD is an independent body designated by the parliament (Assembleia da República) and enshrined by the Portuguese constitution. The CNPD has the power to monitor and enforce the compliance with laws and regulations throughout the entire country in the area of personal data protection, in respect to human rights and fundamental freedoms and guarantees.

As one of the few Member States in Europe Portugal not only enacted patients' rights, but also patients' duties⁵². Particularly important with regards to eHealth are first of all the duty of the patient to provide the healthcare professional with all information necessary to obtain a correct diagnosis and appropriate treatment and secondly the duty of the patient to use health services appropriately and cooperate actively to reduce unnecessary spending. On the other hand the patient does hold the right to consent or not consent prior to any medical act provided by a health professional and the right to the protection of his privacy in any medical service, particularly in respect of the information about their health. Furthermore the right of the patient to access all medical records of his clinical life is recognised, however, he can only exercise this right through a doctor of his choice.

Regarding telemedicine, there is a generic legislation on reimbursement of teleconsultation services⁵³ and the central health administration is planning to issue specific guidelines on these matters (Direcção Geral de Saúde – DGS).

3.6 Financing and reimbursement issues

⁴⁹ Comissão Nacional de Protecção de Dados 1998

⁵⁰ Assembly of the Republic 2005

⁵¹ Comissão Nacional de Protecção de Dados

⁵² Basic Law on Health (Lei de Bases da Saúde – Lei n.º 48/90, de 24 de Agosto) and the Patient Rights and Duties Chart (Cartas dos Direitos e Deveres dos Doentes).

⁵³ Ministerio da Saúde 2009

The main source of financing for eHealth In Portugal is the government budget (Orçamento de Estado) and some specific eHealth projects, which are submitted to and approved by the Portuguese governmental agencies or programs such, as the Quadro de Referência Estratégico Nacional - QREN and co-financed by the EU.

At the central level (i.e. at the ACSS, supporting eHealth projects with a national coverage), the overall average annual budget is over 40 million Euros. This amount is distributed approximately as follows:

- generic software licensing (e.g. Oracle and Microsoft) 35%
- development of specific national applications 30%
- communications 20%
- hardware 10%
- consultancy 5%

In addition, at local/regional level (i.e. by the hospitals and regional health administrations) there are other budgets that cover specific needs and/or projects, including hard and software costs.

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.

Ad-hoc evaluations on information systems and infrastructure

At the present stage, two relevant ad-hoc evaluations have been done: First, a generic evaluation of information systems and infrastructure (and its governance model) of the Portuguese National Health Service in 2006 by PriceWaterhouseCoopers. Thereby an initiative from the former Health Secretary of State, Dr Carmen Pignatelli, was the trigger.

Second, an economic feasibility analysis of the two major eHealth applications: Sistema de Apoio ao Médico – SAM and the Sistema de Apoio à Prática de Enfermagem – SAPE (respectively used by doctors and nurses). Here, the main challenge that has been identified was the fact that the current communication structure as well as SAPE and SAM are in need of upgrading.

Both ad-hoc evaluations were promoted by the Health Secretary of State through the ACSS⁵⁴ (see section 3.2). The studies were implemented and conducted by the consultancy company PriceWaterhouseCoopers and a university department in Lisbon (Gabinete de Análise Económica, Universidade Nova de Lisboa).

Other minor studies on technology or functionality of some projects or applications have also been done – they were also mainly conducted by consultancy companies such as Accenture or Novabase.

⁵⁴ Central Administration for Health System (Administração Central do Sistema de Saúde – ACSS)

4 Outlook

Portugal is undergoing major reforms at the moment. Most initiatives are from the last two years and concerned with the introduction of a national electronic patient summary: here, main stakeholders from a variety of fields have developed a discussion paper, which poses an initial idea for further deployment of eHealth applications.

For the implementation of these plans, ongoing pilots in telemedicine and with local patient summaries and health professional IDs help to identify challenges faced on the national level. These are related to different aspects. First, the political commitment and coherent framework for eHealth in Portugal have to be embraced by the people in charge. Second, infrastructural components have to be developed, such as a communication structure for ePrescription. And lastly, on top of ongoing reforms, further change is needed in areas of legislation and technical standards available in the country.

In sum, the Portuguese eHealth framework is at the moment centred around an EHR for citizens. When the infrastructure, legal aspects and political commitment are in place for this single application, other things will follow this implementation path.

5 List of abbreviations

ACS	Alto-Comissariado da Saúde (High Commissioner of Health)
ACES	Agrupamentos de Centros de Saúde [Health Centre Pools]
ACSS	Administração Central do Sistema de Saúde Central [Administration of the Health System]
AFP	Associação de Farmácias de Portugal [Association of Pharmacies in Portugal]
ANF	Associação Nacional de Farmácias [National Association of Pharmacies]
CIPE	Classificação Internacional para a Prática de Enfermagem [International Classification for Nursing Practice – ICNP]
CNPD	Comissão Nacional de Protecção de Dados [National Data Protection Authority]
CRIC	Centro Regional de Informática do Centro [Regional Computer Centre – Central]
CRIN	Centro Regional de Informática do Norte [Regional Computer CentreNorth]
CRIS	Centro Regional de Informática do Sul [Regional Computer Centre – South]
DGS	Direcção Geral de Saúde [Portuguese Central Health Authority]
DRG	Diagnosis Related Group
EC	European Commission
EEA	European Economic Area
EHR	Electronic Health Record
EMR	Electronic Medical Record
EPE	Entidade Pública Empresarial [Public Entity Business]
EPR	Electronic Patient Record
epSOS	European patients Smart Open Services
ERA	European Research Area
EU	European Union
GDP	Gross Domestic Product
GP	General Practitioner
HCP	Healthcare Provider

HIV/AIDS	human immunodeficiency virus /acquired immunodeficiency syndrome
HL7	Health Level Seven International (authority on standards for interoperability)
HPC	Health Professional Card
HRA	Health Regulatory Authority (Entidade Reguladora da Saúde – ERS)
ICNP	International Classification for Nursing Practice
ICT	Information and Communication Technology
ID	Identification (e.g. number, card or code)
IGIF	Instituto de Gestão Informática e Financeira da Saúde [Institute for Financing and Informatics Management of Health]
IHTSDO	International Health Terminology Standards Development Organisation
INE	Instituto Nacional de Estatística [Institute for national statistics]
IPQ	Instituto Português de Qualidade [Portuguese Institute of Quality] (a public institute under the Portuguese Ministry of Economy and Innovation)
IT	Information Technology
LSP	Large Scale Pilot
MRZ	Machine Readable Zone
NHS	National Health System (Serviço Nacional de Saúde – SNS)
OECD	Organisation for Economic Co-operation and Development
OOP	Out-of-pocket payment
PCCs	Patient Care Components
PHS	Personal Health System
PTS	Plano Tecnológico da Saúde [Health Technology Plan]
PTSIIS	Transformation Plan for Health Information Systems
QRN	Quadro de Referência Estratégico Nacional [National Strategic Reference Framework]
R&D	Research and Development
RIS	Rede Informática da Saúde [Health Information Network]
RNP	Registo Nacional de Profissionais [Health Professionals National Registry]

RNU	Registo Nacional do Utente [Registry for patient ID]
RSE	National EHR system
RTS	Rede Telemática da Saúde [Health Telematic Network]
SAM	Sistema de Apoio ao Médico [Medical Support System]
SAPE	Sistema de Apoio à Prática de Enfermagem [Support System for Nursing Practice]
SES	Secretário de Estado da Saúde [Secretary of State for Health]
SIMS	Serviço de Informática do Ministério da Saúde [Computer Service of the Ministry of Health]
SIS	Serviço de Informática da Saúde [national health informatics department]
USF	Family Health Units
VHI	Voluntary Health Insurance
WHO	World Health Organization

6 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 lab results from the laboratory? 	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

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