eHealth Strategies

Country Brief: Ireland

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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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Disclaimer

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Executive summary

The most current Information and Communications, Technology Strategy for Healthcare in Ireland (2010) sets out a long term vision for the use of Information and Communications Technology (ICT) in healthcare and personal social services in Ireland and the strategy to activate that vision. In accordance with this overall vision the document sets out plans for the period from 2011 to 2014 and it sets out a framework in which investment decisions can be made.

Other Important documents for eHealth development in Ireland include "The National Health Information Strategy"[1] (NHIS) from 2004 which deals with legislative, organisational processes as well as with standardisation and technology in general. Products of the strategy include: the establishment of the Health Information and Quality Authority in 2007, a (forthcoming) Health Information Bill and a unique patient identifier – proposed by the HIQA in 2009.The strategy also intends to assist in the realisation of related strategies, such as "Quality and Fairness: A Health System for You" (2001) and the "Health Service Reform Program" (2003).

In order to consider Ireland'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 Ireland's situation is as follows:

At this time, there are two significant developments concerning electronic health records in Ireland: The first is the "EHRland project" which researches the issues of using electronic health records in a standardised way [2], and the second is a national development by the Health Service Executive called "Healthlink"[3] which aims to implement a prototype healthcare communications network.

For the electronic capture of filled prescriptions Ireland currently uses the Primary Care Reimbursement Services (PCRS), this captures around a third of all filled prescriptions and is used by community pharmacists. There is at present no ePrescription in the form of electronic communication between GP, pharmacy and patient and there is no active ICT project aiming for ePrescription implementation.

For standards Ireland committed to support European Union sponsored standardisation efforts which are overseen by the National Standards Authority of Ireland[4] (NSAI) which is responsible for co-coordinating all standard making, adoption and promotion activity in Ireland. NSAI is also a member of the National Steering Group on Health Information Standards whose task it is to make recommendations to the Health Information and Quality Authority in respect of national standards for health information.

In Ireland, a number of telemedicine services have been in operation since 2006. The applications available include teleconferencing, teleradiology and teleconsultation. Typically telemedicine in Ireland involves local solutions to local problems rather than a national approach, although there have been national initiatives.

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[1] Department of Health and Children 2004

[2] EHRland Project

[3] The National Health link Project

[4] National Standards Authority of Ireland

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1 Introduction to the report

1.1 Motivation of the eHStrategies 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"[5] 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*[6] 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.[7]

On the more specific aspects of electronic health record (EHR) systems, the recent *EC Recommendation on cross-border interoperability of electronic health record systems*[8] 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.[9] 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)[10] - and a project on "Good eHealth: Study on the exchange of good

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[5] European Commission 2004

[6] European Commission 2007

[7] European Communities 2007

[8] European Commission 2008

[9] European Patients Smart and Open Services (epSOS)

[10] eHealth Priorities and Strategies in European Countries 2007

practices in eHealth"[11] 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 Ireland 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

Through the Europe-wide network of national correspondents national level information has been collected. For the report on Ireland, Tony Kenny provided information on policy contexts and situations, policies and initiatives and examples for specific applications. He was IT Manager at Beaumont Hospital[12] (Dublin) and is part of the ProRec-IE Network[13].

He was the IT manager for Beaumont hospital for 18 years, and developed a comprehensive suite of clinical and administrative applications, these were largely based on a single site instance but latterly he engaged with HL7 based cross sect oral solutions.

Pro-Rec Ireland is an affiliate of the Euro-Rec Institute[14]. This is a European wide initiative to promote the awareness and use of Electronic Health Records. It is promoting the business case for certification of EHR software via the EuroRec Seal.He serves as a consultant to the Irish and other affiliates.

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

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

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

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[11] European Commission; Information Society and Media Directorate-General 2009

[12] Beaumont Hospital

[13] ProRec-IE - PROmotion strategy for European electronic health RECord

[14] ProRec Institute

possible when comparing developments in different countries, in spite of the well-know disparity of European national and regional health system structures and services.

Under Section B on eHealth implementation, questions regarding the following applications were formulated: existence and deployment of patient and healthcare provider identifiers, eCards, patient summary, ePrescription, standards as well as telemonitoring and telecare.

The data and information gathering followed a multi-stage approach. In order to create a *baseline* for the progress assessment, the empirica team filled in those parts of the respective questions dealing with the state of affairs about 3 to 4 years ago, thereby drawing on data from earlier eHealth ERA reports, case studies, etc. to the extent meaningfully possible. In the next step, national correspondents respectively partners from the study team filled in the template on recent developments in the healthcare sector of the corresponding country. These results were checked, further improved and validated by independent experts whenever possible.

Progress of eHealth in Ireland 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 *Irish* 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.

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2 Healthcare system setting

2.1 Country introduction[15]

The State has long played a major role in the provision of services and in the regulation and setting of standards for the healthcare system. The Department of Health and Children (DoHC) (An Roinn Slainte Agus Leanai), under the direction of the Minister of Health and Children (DoHC), together with Ministers of State, has strategic responsibility for health and personal social services. In 2005, a new Health Service Executive (HSE) was installed with the objective to “use the resources available to it in the most beneficial, effective and efficient manner to improve, promote and protect the health and welfare of the public”[16]. The HSE thus took responsibility for both the budget and management of health services as a single national entity, accountable directly to the Minister of Health. This replaced a system where the provision of services had been the responsibility of seven regional health boards and the Eastern Regional Health Authority (ERHA) (serving the Dublin area).

In general, there are 30 county and city councils and 80 town councils. These bodies are responsible for a range of functions, including housing and planning, but have only a limited role in healthcare. The Social Partners of the Government (that is, the trade unions, employers, farming organisations and representatives of the community and voluntary sectors) formally also have some role in the broad direction of health policy in the country. The 10-year Social Partnership Framework Agreement for 2006–2015, Towards 2016, recognises the importance of health across the life-cycle and within the National Development Plan. Common health outcomes and system goals are agreed by the Government and the other social partners

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

Key facts about the Irish healthcare system:[17]

Life expectancy at birth: 79.8 years

Healthcare expenditure as % of GDP: 7.5% (OECD 2007)

WHO ranking of healthcare systems: rank 48

Public sector healthcare expenditure as % of total healthcare expenditure: 80.7% (OECD 2007)

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[15] eUser 2005

[16] Health Act 2004.

[17] Data from World Health Organization 2000; Health Consumer Powerhouse 2008; World Health Organization 2009

2.2 Healthcare governance[18]

Decision making bodies, responsibilities, sharing of power

As mentioned above, the Health Service Executive now has many functions in Ireland regarding healthcare governance and many functions and staff from the former structure have been relocated within the new HSE. With a budget of more than €13 billion it is the largest employer in the State with more than 65 000 staff in direct employment and a further 35 000 employed by voluntary hospitals and bodies that are funded by the HSE. It has its headquarters in Dublin.

But the Department of Health and Children (DoHC), under the direction of the Minister of Health and Children (Mary Harney at the time of writing), together with Ministers of State, still has overarching responsibility for health and personal social services. Specifically, the DoHC is responsible for the strategic development and overall organisation of the health service, including the setting of statutory regulations and orders. Under the former health system structure, the DoHC was also responsible for supervising the activities of the Health Boards and other executive, statutory and advisory agencies, as well as controlling the methods of appointment and remuneration, and the conditions of service of health personnel.

Healthcare service providers

Generally, the HSE took over full operational responsibility for running the country's health and personal social services, whereas it reports to an 11-member board appointed by the DoHC The HSE is divided into four administrative areas: Western; Southern; Dublin/ North-East; Dublin/Mid-Leinster. These administrative areas largely use the geographical boundaries of the Health Boards they have replaced. In sum, responsibility for primary care policy lies with the Health Services Executive for operational matters.

The Integrated Services Directorate: Performance and Financial Management was established in October 2009 as part of the HSE's management restructuring to enable a greater integration of services. The National Director Integrated Services Directorate: Performance and Financial Management has responsibility for the delivery of all health and personal social services across the country including hospital, primary, community and continuing care services.

At a national level a number of Assistant National Directors or National Leads are responsible for leading the planning, monitoring and evaluation of services, as well as developing standards and best practice, for these services.

The range of health and personal social services provided by the HSE and its funded agencies are managed within four Regions (Dublin Mid Leinster, Dublin North East, South and West). The four Regional Directors of Operations also manage the funding of services provided on behalf of the HSE through a large number of non statutory agencies

Hospital Services

A range of assessment, diagnosis, treatment and rehabilitation services are provided in Ireland's hospitals. Designated national specialist services incorporate areas of care such

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[18] McDaid, Wiley et al. 2009

as heart, lung and liver transplants, bone marrow transplants, spinal injuries, paediatric cardiac services, medical genetics, renal transplantation and haemophilia.

Supra-regional services include neurosurgery and cardiac surgery, as well as complex cancer treatments and radiotherapy. The HSE manages acute hospital services in 50 hospitals nationally. It also provides Pre-hospital Emergency Care Services (ambulance and emergency response services). Acute hospitals play a key role in undergraduate and post-graduate training and education for medical and health service professionals. Hospitals are also involved in clinical and related research activities, involving close links with universities and other third level institutions.

Community Services

The Primary, Community and Continuing Care Directorate (PCCC) is responsible for the planning, management & delivery of all Primary, Community and Continuing Care services.

Strategic Planning

The Population Health Directorate is responsible for the strategic planning of all aspects of the HSE in order to positively influence health, health service delivery and outcomes by promoting and protecting the health of the entire population and target groups. It has a special focus on tackling inequalities in health and is also responsible for immunisations, infection control and environmental health. Strategy and policy recommendations can cover many areas ranging from the need for greater capacity or development of specialist treatment centres to the use of taxation instruments to promote healthy living.

Its functions are organised at local level through 4 regional offices that are further subdivided into the 32 Local Health Offices (LHOs) and the 8 hospital networks. The regional office is the essential locus of care planning and co-ordination.

Figure 1: Important features of primary healthcare organisation in Ireland

Political/administrative unit responsible for primary healthcare	The primary responsibility for primary care policy lies with the Health Services Executive for operational matters.
Consumer Choice	Private patients can choose their own GP. Publicly funded patients can also chose their GP, but must register with one GP practice.
Financing	Approximately one third of GP (primary care) patients are state funded. The remaining patients pay for their care from own funds.
Public or private providers	GPs are private contractors. They may be either self employed or employed by group practices.
Gatekeeping function of the GP	In almost all cases, the GP is the first point of contact for a patient.
Integrating health: initiatives for coordination	The current HSE policy is to promote the expansion of primary care teams. This is a team-based care concept - involving the GP/Practice nurse/practice physiotherapist/community nurse/home care etc. This is the central strategy of the HSE's transformation programme.

2.3 Recent reforms and priorities of health system/public health[19]

The Irish health system can be characterised as having been in a process of constant review and implementation of staged initiatives since the late 1990s. This process has culminated in major structural changes, made possible due to the economic growth that Ireland has enjoyed recently. The changes affect both the organisation and orientation of the healthcare system. The reforms have revolved around the abolition of the former Health Boards and the creation of a single national body, the Health Service Executive (HSE). The aim is to make the system more primary and community care driven, backed up by improved access to specialist, acute and long-stay services.

Currently ongoing reforms in the health and social care systems

There has been a substantial shift in health policy orientation in the period 2001/ 2010. In 2002, the DoHC published an analysis of acute hospital bed capacity. This argued for a net increase of circa 3000 beds in the health system.

But in 2007, the HSE published another study – on the same topic.[20] This argued strongly for a redirection of delivery services to primary care .It suggested that the number of acute hospital beds required could be reduced – although it did not qualify by how much.

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[19] McDaid, Wiley et al. 2009

This report has become the centrepiece of the HSE's service delivery strategy – known by the moniker "The Transformation program"[21]. The introduction of Primary care teams, a coordinated set of health providers: GP, Practice nurse, practice Physiotherapists etc, is the cornerstone of that approach. The proposal called for 600 Primary Care teams to be in place by 2010.

A parliamentary report on progress towards implanting the solution found that 220 of the total target of 600 centres had been actually delivered[22]. There was further controversy around the nature of these teams. As originally presented a primary care team was essentially housed in a common location. Now it seems that teams can be "virtual", whereby they do not share a physical location.

The current economic and fiscal position of Ireland is clearly having an impact on the availability of resources and the speed of the transition program. But there is now little argument – either in the political or media circles – about the overall strategic direction of Irish health policy. The strategic intent of the transformation program is to change the operational culture of Irish healthcare delivery. This is a long term undertaking – which is experienced from an immediate perspective. This sometimes creates gaps in understanding and acceptance in both the general public and healthcare community.

Recent policy debate has revolved around arguments on the funding mechanism that gives best outcomes and value for money. The current system is largely taxation funded with centralised budgetary allocation. The alternative viewpoint argues for a type of social health insurance – based on the Bismarck model.

Recognition of the need for health system reform can be found in the "Report of the Expert Group on Resource Allocation and Financing in the Health Sector" published by the DoHC in July 2010. Particular focus was given by the chairperson Prof. Frances Ruane to the idea that "Health-care reform is continuous and will always be a 'work in progress', with the pace of reform reflecting available resources and the constantly changing environment… Our proposals are for a systematic and consistent improvement over time, rather than simply ad hoc solutions to short-term crises.[23]" The emphasis of the report is on getting it right, not on speed or hasty decisions. The core principles remain: equity and fairness, quality of service, clear accountability and a people-centred system.

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. Al-though the results of this study date from 2007 and may therefore not reflect latest changes, a more recent pan-European survey is not available.

In terms of infrastructure 73% of Irish GP practices use a computer and 65% of GP practices dispose of an Internet connection. In Ireland, broadband connections have not yet arrived in force; they are used in only 44% of GP practices.

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[20] Health Service Executive 9/10/2009,

[21] Health Service Executive 2007

[22] The Irish Observer 10/2/2010

[23] Department of Health and Children 2010

Regarding the storage of electronic patient data at least one type of individual medical data is stored in 68% of GP practices. The storage of medical patient data is slightly more common than the storage of administrative patient data. 64% of the Irish GP practices store at least one type of administrative patient data.

A computer is available in the consultation room of 68% of the Irish GP practices. However, only slightly more than half of the GPs actually use the computer for consultation purposes with the patients. This implies an "availability versus use gap" of around 12%.

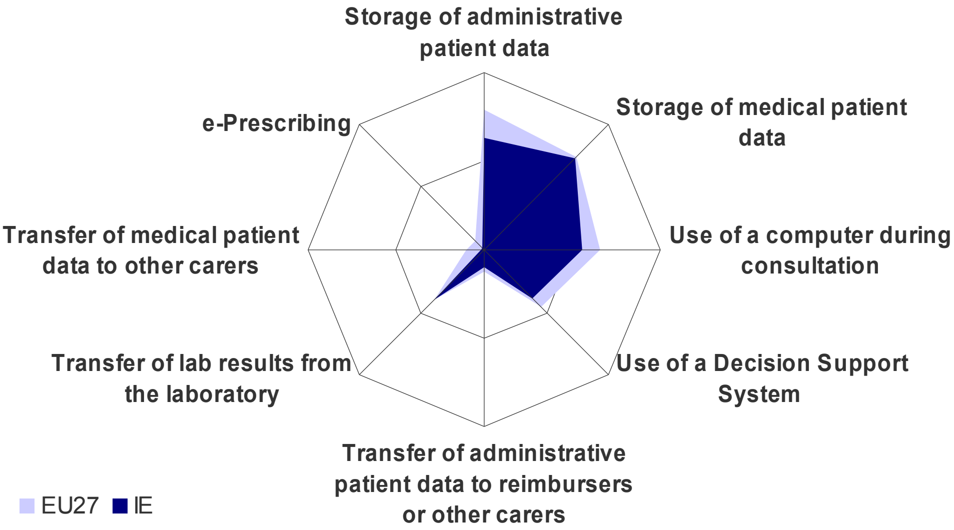
In Ireland the electronic exchange of patient data is not yet common practice.

Not more than 4% of Irish GPs exchange administrative patient data with other care providers. 15% of Irish GP practices that exchange administrative data with reimbursers.

Only 2% of the Irish GP practices exchange medical data with other healthcare providers.

Electronic exchange of prescriptions, commonly referred to as ePrescribing, is practiced by not even 1% of GP practices in Ireland.

Figure 2[24]: eHealth use by GPs in Ireland



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

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[24] 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 are available at www.ehealth-indicators.eu.

3 eHealth Strategies survey results

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

3.1 eHealth policy action

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

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

3.1.1 Current strategy/roadmap

“The National Health Information Strategy” (2004)

The most current Information and Communications, Technology Strategy for Healthcare in Ireland (2010) sets out a long term vision for the use of Information and Communications Technology (ICT) in healthcare and personal social services in Ireland and the strategy to activate that vision. In accordance with this overall vision the document sets out plans for the period from 2011 to 2014 and it sets out a framework in which investment decisions can be made.

Although the focus of this strategy is on the next five years, it is derived from the overall direction for healthcare ICT and it sets out the major goals to be achieved.

To support and enable the provision of quality healthcare ICT will:-

- Be patient/client centric
- Support clinical practice
- Provide access to information when and where required
- Provide information that is meaningful, timely, accurate and relevant
- Support the HSE business objectives
- Support the decision making process in the HSE
- Support greater efficiency and effectiveness in the provision of healthcare

- Be consistent with the individual/organisational needs in the provision of optimum patient care
- Support e-Government, e-Europe and e-business initiatives
- Be based on information and technology standards
- Ensure the security of data and systems

Prior to the strategy of 2010 was a White Paper by the government called "The National Health Information Strategy"[25] (NHIS) from 2004. This strategy deals with legislative, organisational processes as well as with standardisation and technology in general. Specific topics included, which contribute to the development of health informatics in Ireland, are for example:

Selection of addressed topics in Irish White Paper:

Establish a legislative and information governance framework for safeguarding the confidentiality and privacy of health information while optimising its use;

Establish processes and structures that ensure the fuller use of health information in policy;

Improve access to health information for all stakeholder groups;

Establish health information standards that ensure the quality and comparability of health

Exploit the enabling technologies in the collection, processing, analysis and dissemination of health information and its application in the delivery of health services.

Furthermore the NHIS aims to support the implementation of related strategies, such as "Quality and Fairness: A Health System for You" (2001) and the "Health Service Reform Program" (2003). These include defining targets such as the implementation of information-sharing systems and the use of electronic patient records on a phased basis or creation of the Health Information and Quality Authority (HIQA).

In terms of government policy on eHealth, the emphasis in the document is laid upon broader policy issues, such as the following:

- the need for a new Quality assurance regulatory framework,
- the need for a unique personal identifier for consumers of health services
- broad sketch of the proposed technology infrastructure.

In sum, the emphasis in the report is primarily that of provider/policy maker. But the report also recognises the potential that a health portal would offer to patients or citizens in general.

Today, after 6 years of implementing the National Health Information Strategy, it has been successful in establishing the Health Information and Quality Authority in 2007, developing a (forthcoming) Health Information Bill (see section 3.5) and defining a unique patient identifier – proposed by the HIQA in 2009 (see section 3.4.1).

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[25] Department of Health and Children 2004

Generally, the NHIS from 2004 was the first *national* policy document on health information policy. An earlier study, "E-Health in Ireland – A Snapshot Report"[26] (2002), was published by consultants and commissioned by the industry group "ICT Ireland"[27]. It provided a generalised assessment of the potential that eHealth offers to the Irish health service. This report interviewed high level individuals – in either the public or private health sector. On the basis of these interviews, 3 scenarios were developed: 1) an optimistic one, where significant advances are achieved; 2) a more cautious one, where progress is offered, but is slower than the potential and 3) a pessimistic vision, where progress is hampered by a lack of vision and resources.

In retrospect, the cautious scenario best describes what has actually occurred in Ireland. Furthermore, it is interesting to note that many of the policy objectives discussed in the report from 2002 are still valid concerns. But the technology examples provided have not proven so robust: Great expectations existed at that time for a public services broker strategy – REACH. This was intended to connect the citizen to various services provided by Irish public authorities – including health. The REACH project[28] has gradually been scaled down and is now rarely referred to. Part of the issue was establishing rules for collaboration between public service providers. Additionally, the report coincided with the first political appointment which emphasised the role of the Information Society.

Another important government document is the "National Health strategy – Quality and Fairness"[29] from 2001, as it emphasises the need for an information strategy. This lead to the 2004 published National Health Information Strategy. Specific policies, which were implemented in relation to the National Health Strategy, were the following:

- Creation of the Health Service executive which has full responsibility for service delivery – combined with the abolition of the existing 11 health boards, which were subsumed into it (2005);
- Transfer of financial responsibility from the Department of Health to the HSE for service related costs (99% of the voted budget);
- Need for Evaluation of outcomes and quality – this was implemented through the creation of the Health Information and Quality Authority (2007);

On a regional level, the above specified – now abolished – health boards also developed information strategies. Generally, the Southern, Eastern, West and Northern Health Board published strategies. The one that is elaborated here is the "Embedding the e in health"[30] (2004) strategy by the Southern Health Board. This document was released just at the point that the sponsoring organisations were actually closed down.

The strategy is comprehensive and provides a coherent vision for health informatics and a set of projects to implement these. It also recognises the then immanent changes represented by the planned Health Service Executive and a series of related reports into the structures of the health system (the Prospectus report), the financial management arrangements (the Brennan Report) and a report into Medical manpower (The Hanley

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[26] ICT Ireland 2002

[27] ICT Ireland

[28] For further information on the project, visit: http://www.iccs-isac.org/en/isd/casestudies/cs_ireland.pdf

[29] Department of Health and Children 2001

[30] Health Boards Executive (HeBE) 2004

report). It also responded to a critical report on value for money in the Irish Health service – from Deloittes & Touche.

Overall, the strategy anticipated “an enterprise solution“ approach to promote consistency in practices at both a clinical and administrative level of the reformed health service. At time of drafting, many of the contributors would have been involved in the implementation of one such approach. This was Personnel, Payroll and Related System (PPARS) - a human resources system based on SAP technology.

But this project was halted by the HSE in 2006, only two years after the strategy was published. This undermined the credibility of the entire approach. And a political controversy followed in which the possibility to learn from the experience was soon lost in the arguments. Still, the issues that PPARS was attempting to address remain.

None of these documents placed EU policy at the centre of their arguments. But a report issued during the Irish Presidency of the EU - “eHealth: What Future Are We Heading Towards?”[31] does make explicit reference to the broader EU plan.

In 2004 the Department of he Taoiseach commissioned *An eHealthy State?*- a review of eHealth and EU policies in Ireland and issued 12 recommendations for adoption in the Irish Healthcare context. In general these were incorporated into all subsequent strategies and included[32]:-

1. That HIQA and the HSE proactively seek opportunities for the deployment of technology to facilitate the Health Reform Programme.
2. That current examples of best practice in eHealth are used as a basis for further development.
3. That eHealth applications be designed and developed on a ‘shared alliance’ basis that facilitates patient care. …..If patient interaction is placed at the centre of system design, then the resulting systems will deliver maximum patient benefit.
4. That a programme be established to identify the feasibility and value of becoming an eHealth excellence hub.
5. That third-level institutions, and other publicly-funded research institutions, are encouraged to develop a focus on eHealth.
6. That Irish health agencies proactively seek to benefit from the funding and expertise available from participating in the EU Framework Programmes.

Currently, it is expected that the HSE will publish an updated National ICT strategy in the next few months. After a series of meetings with the Departments of Health and Finance in which the underlying objectives and concepts were approved, the Health Service Executive will further proceed this year. Approval has also been obtained to proceed with the development of a framework for applications in information, communication and technical architecture for future ICT developments in the HSE.

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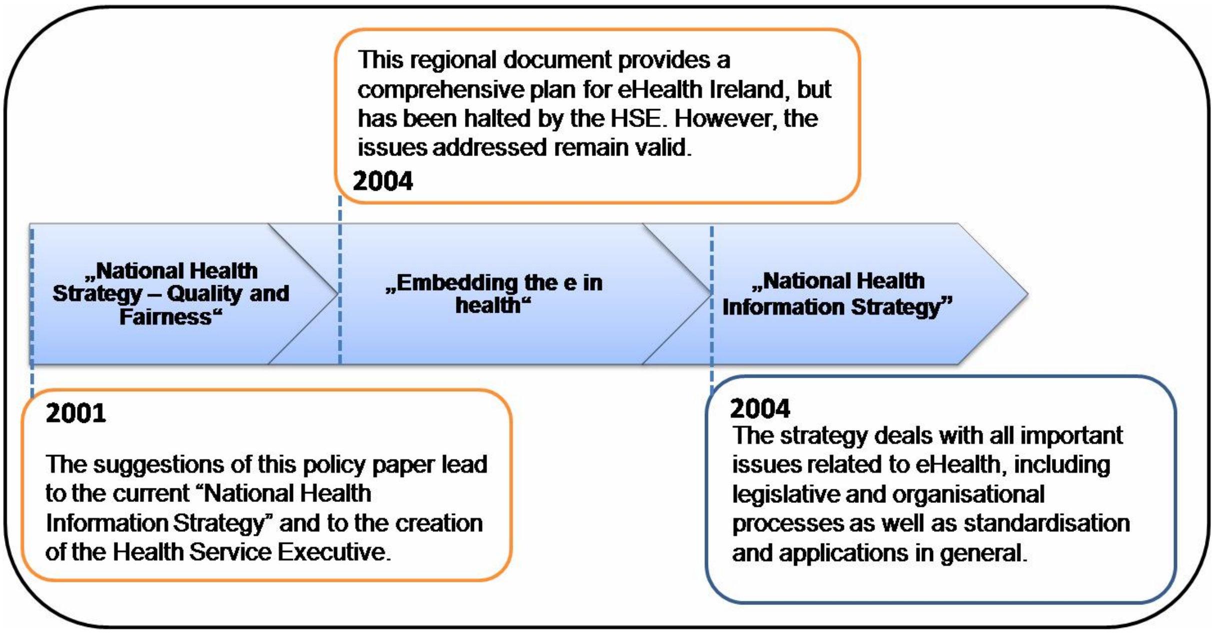
[31] European eHealth Conference 2004

[32] Information Society Commission 2004

HIQA has examined the governance arrangements that currently pertain for Health Informatics in Ireland.[33].They have also made a comparative study of health information governance practices from an international perspective[34].

Figure 3: Irish policy documents related to eHealth



This regional document provides a comprehensive plan for eHealth Ireland, but has been halted by the HSE. However, the issues addressed remain valid.

2004

„National Health Strategy – Quality and Fairness“

„Embedding the e in health“

„National Health Information Strategy"

2001

The suggestions of this policy paper lead to the current "National Health Information Strategy" and to the creation of the Health Service Executive.

2004

The strategy deals with all important issues related to eHealth, including legislative and organisational processes as well as standardisation and applications in general.

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3.2 Administrative and organisational structure

In Ireland, the responsibility for the national eHealth infrastructure is shared by the following institutions:

Irish institutions responsible for eHealth:

Department of Health and Children (DOHC), responsible for setting overall the health policy;

Health Service Executive (HSE), operational responsibility for planning, delivering and operating the eHealth infrastructure;

Health Information and Quality Authority (HIQA), responsible for developing standards for information structures, assessing compliance with those standards and evaluation the quality, reliability and safety of eHealth systems.

Furthermore, the National Health Information Co-ordination Steering group is part of the eHealth administrative and organisational structure. It has a representative structure to engage all stakeholders involved in eHealth from a provider perspective. The above mentioned Department of Health and Children chairs the steering group.

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[33] Health information and Quality Authority 2010

[34] Health information and Quality Authority 2009

This group has representatives of The Department, the HSE and HIQA. Its purpose is to ensure a coordinated approach in the development of policy, investment, standards and delivery of actual services.

In sum, all these bodies are legal entities and were established by legislation. However, the financial background differs: While the HIQA and the DoHC have their own budget – dedicated towards standards development and quality measurement work and innovation programs; the financial package given to the HSE is addressed to cover all expenses related to current (service delivery) and capital (infrastructure) matters. This includes expenditure on eHealth (current/capital). This funding is also the main source of eHealth financing – in 2009 it was €100million of which €25 million was capital spent and €75 million was recurring revenue (for further information see section 3.6).

Concerning the integration of stakeholders in the administrative process, there are different forms in Ireland:

As mentioned before, the National Steering Group on Health Information Co-ordinating Committee engages all stakeholders involved in eHealth from a provider perspective, but all members are drawn from existing official bodies. The same procedure is used for the National Steering Group on Health Information Standards, chaired by the HIQA.

Stakeholder integration on different levels, including health professionals and patients

However, the views of patients are much more difficult to elicit and evaluate. There is a representative group, "The Irish Patients Association"[35], which lobbies on behalf of patients. It is difficult to assess how representative this group is, simply because of the huge logistical problem of e.g. organising meetings on a wide geographic basis. Despite these issues, the patients association has been heavily involved in policy initiatives such as the "Patient Safety Report" (for further information see section 3.5.1).

Additionally, there is the "Health Informatics Society of Ireland"[36] (HISI). This is a voluntary group of eHealth enthusiasts, established in 1996. Currently it has over 700 members, drawn from information technology, medicine, nursing, other professions allied to medicine, education, government and industry and an annual conference held, where a broad church of speakers and participants meet together. HISI has had the practice of inviting a speaker from the Patients Association for the past number of years. Indeed it is the single largest group of individuals who are interested in the whole field of health informatics. It also brings a strong cohort of international speakers to share their experiences and generate enthusiasm. The HISI has recently commenced a series of regular periodic meetings throughout the year designed to maintain interest in the field.

Remaining challenging aspects regarding administrative and organisational issues are related to building an adequate support system for eHealth within the government and interest groups. In detail, this includes the following obstacles which are on the agenda in Ireland at the moment:

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[35] Irish Patients' Association

[36] Healthcare Informatics Society of Ireland

Remaining organisational obstacles:

Finding a leader of sufficient insight and authority to win support for the eHealth initiative;

Building support/buy in amongst the health provider community – particularly doctors – to encourage them to embrace the change process;

Designing a sound architecture on which to start the process, knowing that it will inevitably have to adapt to changes over time;

Building confidence amongst politicians and policy makers that eHealth initiatives are a vital way to improve quality, outcomes and control cost and effectiveness from a long term perspective;

Articulating this vision to the public in a way that communicates a sense of realism and practicality.

The above mentioned challenges are of rather general nature. The following aspects specifically apply to Ireland, due to size and structure:

- Fragmented nature of the existing eHealth infrastructure;
- A relatively recent history of failures on some large-scale enterprise systems that has created doubts and anxiety amongst policy makers about eHealth investments;
- A limited number of good examples to point to so as to boost confidence;
- Limited awareness of the need for an architecture or information standards, amongst the care of health ICT professionals;
- A relatively small pool of human resources to draw on to implement such large-scale changes (circa 60 in total).

3.3 Deployment of eHealth applications

3.3.1 Patient summary and electronic health record (EHR)

In this study, the epSOS project's definition[37] 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

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[37] European Patients Smart Open Services

health systems like Andalucia in Spain or Kronoberg in Sweden, or in HMOs (health maintenance organisations) like Kaiser Permanente in the USA.

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

Two ongoing initiatives: "EHRland" and "Healthlink"

At that time, there are two significant developments concerning electronic health records in Ireland: First, the "EHRland project"[38] a research initiative by the Health Information and Quality Authority and second, a national development by the Health Service Executive called "Healthlink"[39].

The latter is a project which supports a structured discharge format – transmitted as a HL7 V2.4 message string (for further information on standards, see section 3.3.3). The project was initiated in the Mater Hospital in 1995, but quickly evolved into a national project with the launch of HealthlinkOnline in 2003. As of March 2010, 23 acute hospitals (ca. 50% of total number) and 807 GP practice (ca. 33%) are using the service. Ultimately, the Healthlink project is aiming to implement a prototype healthcare communications network with specific reference to Primary Care Practitioners and acute Hospital and agency relationships. Data exchange with this service is operating as follows:

[1] Patient information is generated on the Host Hospital Computer System;

[2] This information is stored centrally in a SQL server database;

[3] User logs into the HealthlinkOnline website with username, password and PIN;

[4] Healthlink messages are only viewable by those who have been given access and have had a browser certificate installed on their PC;

[5] The messages can be viewed, printed or exported safely and securely into the Practice Management System.

Currently, discharge summaries typically do not provide any form of structured disease coding. But such DRG type summaries are submitted to the HSE from each acute hospital. There is no practice of GP's providing clinical summaries to any central repository. GPs do provide details of patient contacts or visits to the Primary Care Reimbursement Services (PCRS) scheme ultimately for payment purposes. In similar manner pharmacists provide details of patients' prescriptions, also for re-reimbursement purposes.

The other ongoing project – EHRland – researches the issues of using electronic health records in a standardised way. This is funded by the HIQA. EHRland started in August 2007 and is planned as a three-year project with a budget of €374k. The according research team is investigating the use of ISO standard EN13606 electronic health record communication (EHRcom) as the basis for development of a national electronic health record system for Ireland. Currently, architectural design work is under way to develop a

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[38] EHRland Project

[39] The National Health link Project

specification of the National Electronic health record component architecture. While this work is still very much in progress, it can be stated that it will include the following:

- Adoption of an evolutionary strategy to gradually build up data on a patient in the electronic health record;
- Patient summaries will be one of the major information artefacts captured – in the first iteration;
- The exiting feeder systems will be adapted to provide such data sources.

In sum, up to this point, there is no formal structure for documenting patient data in the Irish health system. This development is likely to become a reality when the national EHR project is rolled out. Until then, the deployment of patient summary data structures is dependent on a number of infrastructural/architectural decisions. These are the following:

Pre-conditions for the creation of Irish patient summary data structures:

Establishment of a national clinical repository (EHR) for patient records;

Design of a common structure/heading set for use in describing patients e.g. conditions, treatments, medications;

Design of a common coding structure to codify such data.

In addition to the list above, a framework including security, access and consent aspects as well as legal issues is needed to enable this development. In detail, the following aspects have to be addressed:

From a technical perspective, infrastructural aspects are relevant, which concern data processing and communications technologies. A gradual transition towards a set of regional data centres is under way (there is likely to be 3 such centres – spread geographically). A network infrastructure to connect all state funded agencies is at an advanced stage of planning. In order to design an overall system for EHRs, the following components are needed:

- Services
- Data structures, types & content
- Data residence and sub setting
- Access rights and policy
- Clinical coding and clinical content
- Update frequency and co-ordination

And finally, the legitimate secondary use of data, which leads to the remaining legal challenges, needs to be addressed. As it will be further outlined in section 3.5 on legal issues, a revised legal framework in form of the Health Information Bill is underway. It will provide the legal basis for data transfer and patient access activities in Ireland. It will also set out the compliance, monitoring and complaints processes for individuals who have concerns about the use and security of their data held in the EHR.

Remaining challenges are of technical, organisational and funding nature

Another remaining obstacle is the organisational aspect of electronic health records as implications of a National EHR for patients and health professionals need to be worked out in considerable detail. One of the major implications is that identity schemes have to be designed and produced for the entire health population (consumers/providers). This is a massive undertaking which has taken years to accomplish in other jurisdictions. It is likely that an evolutionary strategy will be adopted to build on existing identification schemes.

Additionally, the funding required to develop and deploy a national EHR will be substantial. The amount has not been quantified yet, but the current economic circumstances in Ireland will make securing such investment more difficult than before. Some well publicised difficulties of other national programs – i.e. England – add to that uncertainty.[40][41]

Overall, in order to resolve remaining obstacles for the development and deployment of interconnected system for patient data transfer, a governance structure is needed, which provides the framework for:

- Legitimate uses of an individual medical data
- Access rights of the main actors
- Security policies and standards that will need to be applied
- Patient Consent policy
- Standards that must be applied to all data extracts/clinical findings and other observations
- Legal framework that will govern the new EHR service

Regarding the existence of condition-specific summaries in Ireland, it can be stated that there is one major disease register: The National Cancer Registry. There is a clear recognition of the benefits need for more comprehensive registers. When Ireland held the EU presidency in 2004, the DoHC promoted the need for additional registers – particularly in the area of cardiovascular disease- which was the leading cause of death in Ireland at the time.[42]

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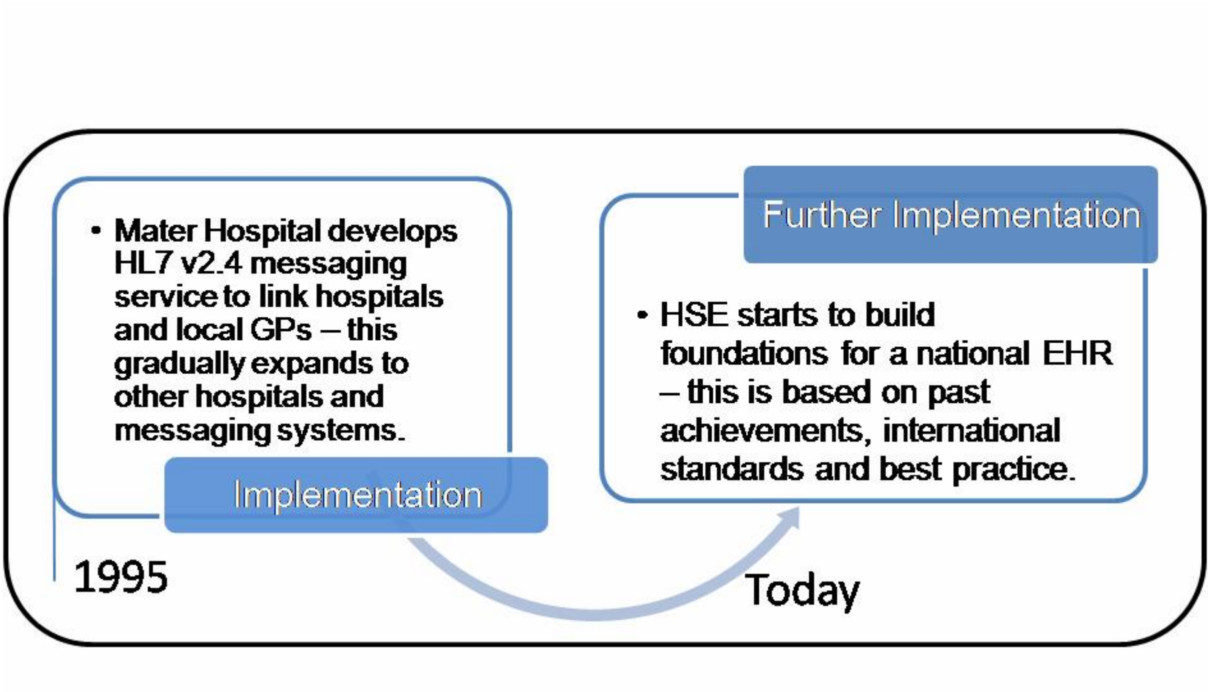
[40] O'Brien and Hayes 2009

[41] eHealth Insider 10/8/2010

[42] Department of Health and Children 22/8/2010

Figure 4: Patient summary in Ireland



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3.3.2 ePrescription

In the framework of this study and following work in epSOS[43]*, 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.*

Ireland currently does not have ePrescription in form electronic communication between GP, pharmacy and patient and there is no active ICT project aiming for ePrescription implementation. But the Primary Care Reimbursement Services (PCRS) enables about 1/3 of filled prescriptions to be captured electronically for community pharmacists. This is a rich information source that is now being mined to analyse prescribing patterns by region. In addition, the Medical Care Pharmacy/Prescription Service provides a limited form of electronically based service and there has been a significant amount of development work by software providers of pharmacy systems and GP systems. Ongoing work also includes an EU-funded project, which partially implemented ePrescription in order to test the feasibility of this electronic service and a tender by one acute hospital.

No ePrescription available, but favourable preconditions

Overall, Ireland has favourable preconditions for the implementation of ePrescription, as the consistent identification of all medication products is possible: The Irish Pharmaceutical Union maintains an electronic file of approved medication products. Approval of such products is the remit of the Irish Medicines Board who licence all products for use in Ireland. Each product has a unique EAN code number. All in all, the availability of this infrastructure will facilitate the development of ePrescription.

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[43] European Patients Smart Open Services

In order to make ePrescription national routine in Ireland, different technical, legal and organisational obstacles have to be overcome. Enabling steps would include the following:

On the technical side, the integration of a prescribing software package in GP practice software is needed. There are about 6 suppliers in this field, but the two largest have about 75% of the market. Furthermore, a secure message transmission service to connect the GP practice to the community pharmacists is required – either via a dedicated network or an encrypted VPN/message service.

Legal issues that need to be addressed, in order to develop and deploy ePrescription in Ireland, are the following. These – partly general – eHealth requirements, which still have to be addressed in Ireland, are listed below:

Legal requirements for ePrescription:

Enabling a unique health identifier for each individual and a transitional process to allow existing identifiers in GP/Hospital systems to be utilised, merged or replaced;

Implementing a identification scheme for all health providers involved (Doctors/nurses/pharmacists) together with a scheme of electronic signature (largely in place now);

Enabling GPs/hospital doctors to record all prescriptions for a patient by electronic means, filled in at a community pharmacy;

Establishing the security/access and data management regime for such patient data – together with provisions for external oversight;

Establishing penalties for any individual, company or other entity that breached these security or confidentiality rules;

Changing the requirement that some drug prescriptions must be issued on paper and signed in ink[44].

In terms of organisational aspects, an overall framework has to be developed, including rules, which drugs are prescribed and dispensed (e.g. use of generic names/substitutability of generic items) and if private patients are included or excluded in this process. Another challenging aspect related to organisational issue is to make ePrescription a business case and track benefits, encourage and patient participation. This also includes negotiations with drug supplier companies in relation to pricing, promotion and marketing activities and a change in the contracts of GPs in order to win their support for such a scheme in relation to private patients. Furthermore, GPs, pharmacists and patients have to be trained and it has to be negotiated with the Revenue Commissioners on the acceptability of data for tax deduction purposes.

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[44] Which is now required by Regulation 7, a Medicinal Products Regulations 2003, SI 540/2003.

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.

The Health Information and Quality Authority is responsible for health informatics standards in Ireland. It was established by law in 2007. Mains tasks of the HIQA include the following.

HIQA core responsibilities:

Setting standards for all aspects of health and social care information;

Developing guidelines for the collection and use of information in health and social care;

Identifying gaps in health information and making recommendations to fill them;

Making relevant information about health and social care services available to the public.

Health Information and Quality Authority and the National Steering Group on Health Information Standards

Additionally, HIQA chairs a National Steering Group on Health Information Standards[45], which has representatives of all the key provider stakeholders involved in healthcare. The role of the National Steering Group on Health Information Standards is to make recommendations to the Health Information and Quality Authority in respect of national standards for health information. The Group is aiming to ensure a coherent and consistent approach to the development of standards by facilitating dissemination of international best practice and supporting and promoting the use of standards throughout the health sector.

Another important stakeholder related to standardisation and interoperability, which is also part of the National Steering Group, is the National Standards Authority of Ireland[46] (NSAI). NSAI is responsible for co-coordinating all standard making, adoption and promotion activity in Ireland. It is established by law since 1996. NSAI has a working group in Health Information standards, which is very active. It includes representatives from health provider organisations and also has a strong representation of academic practitioners and commercial vendors.

Though Ireland is currently not a member of IHTSDO and has formally not adopted any international health informatics standard, Snomed CT has been deployed in the Anatomic Pathology services of many hospitals for a long time. And there have also been a number of training sessions organised by HIQA to heighten awareness of Snomed CT. However, its use as a descriptor of e.g. clinical findings, observations are much more limited.

In principle, Ireland committed to support European Union sponsored standardisation efforts. Related to this, the NSAI has adopted the role of commenting on and promoting the adoption of health informatics standards emanating the CEN and ISO. Ireland is also

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[45] Health Information and Quality Authority

[46] National Standards Authority of Ireland

a member of HL7 international and use of HL7 v 2.x is widespread in health software in daily use.

As a future challenge it is noted that it will be difficult to convince the healthcare informatics user community of the relevance, value and benefit of standards. In a context of huge pent up demand for informatics solutions combined with a tradition of “go it alone” solution seeking this is a formidable task. However, there is a general recognition of the benefits of having standardised methods of storing, communicating and sharing health data. So there are no fundamental objections to adopting health standards, but rather an uncertainty on how best to do so.

The limited understanding of health informatics standards amongst the health informatics profession is another limiting factor or rather the limited size of the Health IT community in general. There are currently about 600 IT professionals in the public sector (of a total 112.000 – circa 0.05%). About 10% of those are health informaticians. This balance is a typical portfolio of general ICT skills. But Irish universities have an active program of health informatics education .They graduated circa 100/150 health informaticians each year. Many of these people are employed in the general health system. So the shortage could be rectified if this became a policy priority.

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”47. 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 delivery[48].

Telemedicine services have been widely available in Ireland since the early 1990’s. One of the first National Teleservice Programmes was – The National TeleNeuroRadiology Service which commenced between Limerick and Cork in 1994[49].

The European Commission evaluation of that programme (TASTE) led to the now generally accepted criteria for assessment of clinical benefits and economic evaluation of Telemedicine

A number of other Telemedicine services have been available at National, regional and local level also since the mid 90’s examples include telemedical services to the islands and remote areas, on-board support to the naval and rescues services, neo-foetal, dermatology, psychology, orthopaedic, oncology and chronic disease programmes, etc.

Examples of current Telemedicine projects include:

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[47] Europe's Information Society

[48] European Commission 2008

[49] Gray WP 1997

Telemedicine applications in Ireland:

Teleradiology referral service for neurological assessments operated by Beaumont Hospital[50] launched in 2006 (the national neurological centre)

Spinal injuries assessment service operated by the Mater Hospital[51] (the national Spinal injuries centre) – 2008

Burns assessment referral service in St James Hospital[52] launched in 2008 (the national burns centre)

Electrocardiography referral service to the Beaumont Epilepsy service[53] (2007)

'Moving Forward Assistive Technology Project' operated by Caring for Carers works through remote monitoring for those between the ages of eighteen and sixty five with a physical or sensory disability[54]. (2007)

Telecare project pilot run by the Alzheimer Society of Ireland to augment the already exisiting care for persons with dementia[55] (2010)

In addition, there are a number of teleconferencing facilities in operation, which are mainly used for medical education. But at least one is used for ontological consultations between an Irish cancer centre and Sloan Kettering Hospital[56] in New York.

Typically telemedicine in Ireland involves locally inspired efforts intended to solve local problems. However, this approach has been proven viable and delivers tangible benefits. Only one comprehensive service exists – the neurosciences referral service in Beaumont Hospital. The interesting aspect of this development is that in has the broadest coverage (circa 30 hospitals) and it was developed without any state funding. It operates on a modest annual subscription, designed to cover running costs.

As an obstacle to the development of telemedicine applications in Ireland an assessment study from 2007 identified the following:

> *"the development of telemedicine in the Republic of Ireland has been unplanned. A national telemedicine strategy might lead to an integrated national network in the future, which could help to provide more equitable access to healthcare".*[57]

Additional challenges that need to be overcome in order to deliver telemedicine in Ireland effectively are the following:

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[50] Beaumont Hospital

[51] Mater Misericordiae University Hospital

[52] St James's Hospital

[53] Beaumont Hospital and Epilepsy Research Group 24/11/09

[54] Caring for Carers 2010

[55] Keogh C.; Alzheimer Society Ireland and Delaney S.; Work Research Centre 2010

[56] Memorial Sloan-Kettering Cancer Center

[57] Maher, Craig et al. 2007

Challenges for Irish telemedicine deployment:

Policy inertia that is slow to recognise that telemedicine is a valuable component of safer and efficient health delivery;

The relatively small size of the country which – paradoxically – undermines some of the perceived benefits of telemedicine;

The disruptive change that effective telemedicine services could have on the delivery patterns of some specialist services;

A cultural tradition that "face-to-face" is the only way to deliver effective healthcare – shared by both patients and doctors;

Limitations in the broadband infrastructure that impose bottlenecks in some regions.

Furthermore, there appear to be limited telemedicine links between the Republic of Ireland and Northern Ireland. The cooperation with Northern Ireland could be a benefit for telemedicine development, as it launched a large-scale telehealth tender in 2008 with a budget of £46 million. Once implemented, the province will become one of Europe's leading providers of telehealth services to its population.[58]

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 Ireland and for which purpose.

3.4.1 Unique identification of patients

In Ireland, the Public Service Number (PPSN) is currently used for taxation and social welfare services. PPSN number is assigned at birth or on first entry to the country. In general, there is no tradition of universal citizen IDs which could also be used for healthcare purposes. Therefore, policy plans address this issue since 2001 ("Quality & Fairness Health Strategy", "National Health Information Strategy" (2004)).

Planned "Unique Health Identifier" (UHI) on the basis of the "Public Person Services Number" concept

The legal framework to create a unique personal (patient) identifier will be established in the forthcoming Health Information Bill (see section 3.5). This is due to be published in the second quarter of 2010. The bill is likely to establish a "Health ID" as a distinct way of identifying an individual to the Health services. This will be separate from the other national identifier – The Public Personal Services Number (PPSN).

As no draft version of the legal framework is available up to this point, it can only be assumed that the planned health ID or "Unique Health Identifier" (UHI) will follow a similar

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[58] eHealth Europe 8 May 2008

approach as the PPSN mentioned above. Thereby, the UHI will be a unique number consisting of circa 10/13 characters.

The lead position on the structure/function and design of the identifier has been taken by the Health Information and Quality Authority (HIQA). HIQA has published 2 reports on the topic: 1) “Recommendations for a Unique Health Identifier for Individuals in Ireland”[59] (2009) and 2) “International Review of Unique Health Identifiers for Individuals”[60] (2010). Both papers express the need for a unique patient identifier in Ireland, as it is stated:

> *The absence of a UHI for individuals is the single most important deficiency in the health information infrastructure in Ireland.*[61]

Therefore, in conclusion, the Authority recommends the following to the Minster for Health and Children:

Recommendations by the Irish HIQA:

The safest and most cost-effective option for a UHI for Ireland is a new healthcare-focused identifier, which is based on international best practice;

The exact nature of this new identifier should be determined through regulation;

The Health Information and Quality Authority established a broadly representative group of stakeholders, chaired by the Authority;

Support the development of a road map for the introduction (roll-out) of the identifier;

Based on international best practice, it is essential that an appropriate infrastructure and governance structure are put in place prior to implementation of an identifier;

The new identifier should be introduced as soon as possible.

The broad representative group, which is mentioned in the recommendation list by the HIQA will include different stakeholders as well as be in charge of the development of the health identifier. Specifically, the included stakeholders are the following:

- Representatives from the Department of Health and Children;
- Department of Social and Family Affairs;
- Department of Finance;
- The Data Protection Commissioner;
- Patient/Public representative.

Furthermore, the tasks of the group will include to determine the exact format of the new unique health identifier, establish the appropriate governance arrangements as well as provide detailed costing – both for capital and recurrent budgetary – and consider the relationship between the UHI system and the proposed National Client Index (NCI). The NCI project (formerly the central client eligibility index project) was established to deliver a single point of service for all national schemes, supporting an up-to-date, accurate,

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[59] Health Information and Quality Authority 2009

[60] Health information and Quality Authority 2010

[61] Health Information and Quality Authority 2009, p.5

verified and shareable index (using PPS Number) and standardisation of business practices.

1/3 of the Irish population is mapped in the "Primary Care Reimbursement Scheme" (PCRS)

Beside this development of patient IDs, a national register of clients exists, which contains data on patient who receive state-funded health services. This registry is known as the "Primary Care Reimbursement Scheme" (PCRS), which includes about 1/3 of the population. The Health Service Executive (HSE) has opted to base an interim solution to patient identification on this data source, called the National Client Index. In addition the registry data is maintained by the HSE, who has specific function dedicated to this task.

Generally, the PCRS is a registry of patients who have established an entitlement to "free" medical care. Such entitlements are reviewed on 3 year cycle – or when an individual's circumstance changes.

3.4.2 Unique identification of healthcare professionals

For the group of healthcare service providers, each profession operates its own membership structure arrangements. This implies that at present there is no national solution to identify healthcare professionals in a nationwide scheme.

The available register arrangements include the following:

- Doctors are registered with the Irish Medical Council. Their membership number is mapped into various State re-reimbursement systems i.e. the Hospital inpatient enquiry system, which tracks all hospital consultants using a unique number. General practitioners are registered on the PCRS database in the same way;
- Nursing professionals are registered with the Irish Nursing Board, which issues each individual with a unique number to prove their registration;
- Pharmacists are also registered in the PCRS scheme to cater for drug payment re-reimbursements and regulated by the Pharmaceutical Society of Ireland.

The allied health professionals, for example physiotherapists are all registered with their own associations. Thereby, proving membership is an essential pre-requisite for obtaining employment in the Irish Health Service – public or private.

Planned Health Provider Credential System

The above mentioned legislative framework will most likely also address a Health Provider Credential System for health professionals, which would then be maintained by a relevant professional body, who certifies individual as a competent professional. One solution could be that professional IDs would be sub-contracted to the various existing professional bodies.

3.4.3 The role of eCards

The Irish Government is currently implementing an ID card for social services. This will have a photo ID and an eChip on the card. Previous to this initiative, Ireland had and still has different cards for identification: There is the medical card, which approximately one million citizens have. This cannot be named a unique identifier, as it is designed just to prove a named individual's entitlement to various health services and lacks any form of photo ID.

Ongoing implementation of ID card for social services with an eChip

There are also other formats of eligibility cards issued for health service purposes, such as drug re-reimbursement, GP visit entitlement or long-term chronic illness entitlements. In addition, approximately 50% of the population have some form of private health insurance – this usually involves a type of membership card. But it has no significance apart from proving membership of a particular scheme.

In preparation to the ongoing implementation of the ID card for social services, there have been a number of limited scope experiments with eCards in some of the former health board regions e.g. in the former Eastern Health Board[62].

In sum it can be stated that as a national EHR is in the process of development and implementation, the infrastructural elements for the creation of an eCard system will be deployed within coming years. Furthermore, associated patient and diseases registries are created, which are also envisaged in the current HSE ICT plan.

The current development of the professional registry or Health Provider Credential System also applies to the implementation of a healthcare professional eCard, as both are connected to the forthcoming Health Information Bill. It is likely that the management or operation of such a card will be governed by a high level supervisory group. But the day-to-day operations are likely to be sub-contracted to the individual professional bodies.

The main challenges related to the creation of patients and healthcare professional identifiers as well as eCards can be summarised as cultural and infrastructural.

The biggest challenge will be building consensus to justify the need and benefit of such a development. There is strong cultural resistance towards using ID cards as proof of identity. However, this trend is slowly changing, as the business case for being able to establish an identity grows. There is now an acceptance that existing methods of proving entitlements for general government services i.e. social welfare payments -requires some form of personalised ID system- photo card/pin number etc.

But there is also a need to establish clear governance arrangements around the access to and the secondary uses of such data. The Data Protection Commission and the Freedom of Information laws have gradually begun to raise awareness of/ confidence in the legal protection of personal data.

The new Health Information Bill will raise awareness that support by “health specific” regulations is needed. This however will not replace the provisions of existing laws on data protection and freedom of information. But it will add additional provision to deal with health specific circumstances i.e. access to past encounter data, family or guardian rights of access for minors/elders etc.

Considered as a whole, it appears that the winning of citizens’ trust will be a big challenge for any form of eHealth system. There is considerable scepticism amongst citizens about the quality of some aspects of public services in Ireland. So a determined effort needs to be invested in assuring citizens of the security/confidentiality/reliability of any proposed eHealth system. If it is shown to work effectively, it will gain this trust relatively quickly.

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[62] The former Health Board system of Ireland was in 2005 replaced by the Health Service Executive. Initially, eight health boards existed, with a functional area in which they operated.

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.

The Department of Health and Children will shortly publish the Health Information Bill, which will establish the legal framework for eHealth in Ireland. The need for this was recognised in the National Health strategy (2001) and the National Health Information strategy (2004).

Forthcoming "Health Information Bill" as eHealth legal framework

Preliminary work for the legislative enactment has already been delivered by the HSE, "An Information and Communications Technology strategy for healthcare" and HIQA published a series of reports that analyse the issue of for example unique identifiers or governance.

As there was no final draft bill available at the time this report was written, it can only be assumed that the regulation will seek to support the official responsible for distinctive aspects of health service delivery. A discussion paper on the Health Information Bill was released in June 2008. In this paper the main purposes of the Bill were set out as follows:

- to establish a legislative framework to enable information to be used to best effect to enhance medical care and patient safety;
- to facilitate the greater use of information technologies for better delivery of patient services;
- and to underpin effective information governance structure for the health system in general.

Furthermore, it is assumed that Health Information Bill will regulate that:

- The HSE will be responsible for the national EHR and the associated messaging/ disease registries etc.;
- HIQA will be responsible for quality, governance and information standards. It will monitor compliance with these standards.

In Ireland, there is also a separate legal framework[63] for assessing the competency of practising medical practitioners. But this law is operational at the time being, as there are various ongoing issues between the Minister, the Medical Council and other medical organisations. ICT professionals working in healthcare have the opportunity to validate their qualifications and experiences and register by a scheme operated by the Irish Computer Society- I-CHIP. This is modelled on the UK CHIP scheme which has been in operation for some time.

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[63] Health and Social Care Professionals Act 2005, Medicinal Practitioners Act 2007 and Pharmacy Act 2007.

3.5.1 Patient rights

Substantial body of case laws defines various patient rights

Ireland does not have a tradition of enumerated patients' rights. The Irish Constitution provides for a right to equality and sets out "unenumerated" or "unspecified" personal rights of the citizen[64]. Trough a substantial body of case law, however, these rights were said to include: the right to autonomy, the right to dignity, the right to bodily integrity, the right to privacy and the right to consent and the right to freedom for inhuman and degrading treatment. Furthermore account should be taken of the Medical Council Guide, which specifies patients' right with regards to information, consent, representation, medical records, privacy and intimacy.

In general, there is a very strong emphasis on patient safety from the Irish Minister of Health, the Department of Health and the senior management of the HSE and HIQA. The policy on patient safety has been articulated in more detail through a report published in 2009 – The Madden Report on Patient Safety[65].

In sum the report, which was published by the Commission on Patient Safety and Quality Assurance, recommended the following;

Madden Report recommendations:

Involvement of patients, carers and service-users (25) – this includes communications and open disclosure;

Leadership and accountability in the system (27), including governance, management and reporting structures, education, training and research;

Organisational and professional regulatory framework (24), addressing licensing of healthcare facilities, regulation of healthcare professionals and credentialing;

Quality improvement and learning systems (55) – this includes evidence-based practice, clinical audit, adverse event reporting, medication safety, health information and technology;

Implementation (3)

All in all, the Minister of Health, Ms Harney, accepted these recommendations. She has established a task force, led by the Chief Medical Officer of the DOHC, to plan for their implementation. This process is under way at present.

The Madden Report also makes explicit reference to the need to regulate healthcare agencies and providers. The Minister of Health has announced a commitment to establish the legal framework that will require all health provider organisations to be "licensed". It is likely this task will become the responsibility of HIQA. By inference this will include the processes around the delivery of Telemedicine services.

Patient right to access medical records independent from where, how or by whom it is stored

Regarding access rights of patients to electronic health records, the forthcoming Health Information Bill will address this issue. Until the bill is enacted, the following applies: The Data Protection Acts (1988/98/2003), the Freedom of Information Acts (1997/2003) and the Medical Council Guide provide an individual with extensive rights to access and correct their existing medical records either in paper or in electronic form. In addition, the

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[64] Article 40.1 and 40.3.1. Irish Constitution.

[65] Department of Health and Children

Freedom of Information Act sets out the rights of an individual to access their own medical records – regardless of the agency holding them, including GPs as private individuals/bodies. There is also provision for refusing to grant access in situations where, in the opinion of the health professional, releasing it would not be in the patient's best interest. This usually is resolved by releasing it to another nominated person, often the person's own GP. It is likely that the new Bill will simply continue these existing rights.

Another aspect of patient rights, the re-use of data, attracted a lot of comments in the Health Information Bill consultation process. There was a strong consensus that secondary uses should be clearly defined by Ministerial order or some other form of statutory instrument. This also applies to e.g. the reporting of patient data to a national disease registry. Health providers would be authorised to provide this data as set out. But other secondary uses of data e.g. participation in some form of study or clinical trial, would require explicit patient consent. But it was also recognised that large volumes of clinical data are a very valuable artefact of clinical and epidemiological research. Therefore, the use of patient data that had been "de-identified" was considered a legitimate use.

This regulation provoked a debate on how to handle situations where the data "de-identification" could be broken if e.g. a patient had some form of life threatening condition could. So far, no consensus position was reached on this point.

3.6 Financing and reimbursement issues

In Ireland, the main source of eHealth funding is the Health Service Executive. Their internal draft ICT strategy for healthcare estimated that the capital requirement for eHealth in the years 2008 up to 2011 would be €264 million. This was recognised to be a holding investment to re-build confidence in eHealth amongst policy makers. Additionally, in 2007 the Irish Government launched its National Development Program 2007-2013 (see section 3.1.1). This set out a very ambitious program of capital development with a total investment commitment of €184 billion in the period. EU funds would contribute €20 billion of that amount. The allocation for health investment is €5 billion (€4.3 billion from public and €0.7 billion from private sources). The allocation for Health ICT is €490 million.

eHealth budget allocation through ICT strategy and National Development Program

As these financing plans were published before the current economic crisis, it is apparent that the government's ability to sustain this level of commitment is in doubt, as there will be cuts in the capital program in order to bring the fiscal budget into balance. And second, it will be difficult to win funding – at least until the crisis is seen to be ending.

Furthermore, there is a strong private hospital sector in Ireland, which made significant investment in eHealth for own use and from self-generated sources. At present, there is no overarching architecture to encourage or permit connectivity between these private providers and the publicly funded system. But there is a considerable degree of policy discussion amongst political parties and other policy commentators on the topic of changing the re-reimbursement basis for healthcare delivery.

In principle, there is a consistent theme in Ireland favouring a shift towards a social insurance model, which would ultimately establish a "Bismarck"-style method of funding and reimbursing healthcare as practices in many European countries.

Right now the biggest challenge in Ireland in terms of financing and reimbursement issues is to convince policy makers that investing in eHealth is a good use of scarce public funds, as policy makers are caught in a difficult dilemma: On the one hand they can see that carrying on with current manual systems and process offers very little prospect of change. On the other hand, they are doubtful of the feasibility of some of the eHealth proposals that are advanced as solutions to this issue.

EU interoperability goals strengthen eHealth investments

These doubts are grounded on real experiences of eHealth project failures – in Ireland and elsewhere. But there are also strong persuasive arguments arising from achievements in other European and US health systems. The increasing pressure from the EU to enable interoperability of patient data between different EU countries is also adding strength to case for moving forward with eHealth investment.

There is also a growing awareness that eHealth is simply an enabling tool to structure the overall health system to achieve government policy outcomes. So the effectiveness of such tools is crucially dependent on the clarity with which policy objectives are articulated and policy measures, incentives, directives and payment methods are aligned with those policy objectives.

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.

In Ireland, there is no single evaluation actor – instead responsibility is distributed between the Health Information and Quality Authority (HIQA), the Health Service Executive (HSE) and the HSE and the Irish Government Comptroller and Auditor General (C&AG) also, since March 2010, the Irish Medicines Board (IMB). The allocation of tasks is the following:

Evaluation responsibility distribution:

HIQA is responsible for monitoring the safety and quality of health processes and systems – including eHealth component assessment of any delivery solution;

HSE has its own performance monitoring and measurement framework[66], which mainly focuses on tracking actual versus plan performance. Though, it does not have evaluation as a main focus;

HSE Internal Audit process performs an overall assessment of adherence to HSE processes and procedures in the context of routine operations and separate capital projects. Its focus is primarily on financial compliance, but it also addresses other aspects of Value for Money;

C&AG have a statutory responsibility to examine the financial accounts of any body funded by the Irish parliament. They report mainly on financial compliance, but also examine value for money issues. This service is independent of all government departs, reporting directly to a subcommittee of the Irish parliament;

IMB is responsible for the regulation of medical devices on the Irish market.

In sum, the range of evaluation undertaken on eHealth is relatively limited – being mainly concerned about financial controls and compliance. On occasion, the C&AG have conducted audits of eHealth investments, but these have rarely examined the broader policy/utilisation of such investments or their use in an organisational context.

For all evaluation activities, the National Development Plan[67] makes a commitment to conduct evaluation reviews as well as post-implementation assessments. This plan was published in 2007. It called for a commitment to invest €184 in the years 2007-2013. Because of the current economic situation, it is unlikely that those actual targets will be reached. But what is particularly interesting, is that the overall shape of the plan remains intact.

Furthermore, there have been a number of evaluations of Irish eHealth initiatives conducted by academic researchers. The HSE has commissioned a compressive review of organisational change processes from a local university. This examines some of its own experiences in a dispassionate manner. Academics also periodically publish reviews of eHealth in Ireland. But this happens less frequently.[68]

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[66] Health Service Executive 2010, Appendix 6

[67] National Development Plan 2007

[68] Sammon and Adams published a review of the PPARS project which gives a thoughtful critique of the factors involved in this project.

4 Outlook

Ireland is currently taking a leap forward in eHealth development in the field of legislation. At this point, a Health Information Bill is expected to be passed by Parliament, which defines the framework for electronic applications such as the electronic health record or the eCard. At the same time the Irish Government is promoting a cultural shift towards the so-called Health 2.0, which includes a new understanding of patient-doctor-relationship and re-designing the nature of healthcare delivery processes.

In sum, eHealth initiatives are now addressing the underlying fundamentals of the electronic infrastructure and recognise the interdependency of factors that influence the outcome of any ICT project. This derives from the fact that in the past projects, which did not address these issues, failed – for example the REACH project or the previous strategy developed by the Health Boards “Embedding the E in health”. The cancellation of the PPARS project a back-end administrative system became a matter of intense political controversy and one after-effect has been that ICT projects are associated with “risk” in policy makers thinking.[69]

For future developments, Ireland is focusing not only on the underlying fundamental structure and the interdependency of factors, but also on the potential of EU-wide health initiatives. This includes the policy document, which was signed by the Irish Minister of Health, Ms Haney, “Safe and efficient healthcare through eHealth[70]”, which commits the government to actively work to support interoperable exchange of citizen’s health data with other EU states.

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[69] McDonagh 26/3/2006

[70] Council of the European Union 2009

5 List of abbreviations

C&AG	Comptroller and Auditor General
DoHC	Department of Health and Children
DRG	Diagnosis Related Group
EAN	European Article Number
EC	European Commission
EEA	European Economic Area
EHR	Electronic Health Record
EMR	Electronic Medical Record
EPR	Electronic Patient Record
ERHA	Eastern Regional Health Authority
epSOS	European Patients Smart Open Services
ERA	European Research Area
EU	European Union
GDP	Gross Domestic Product
GP	General Practitioner
HCP	Healthcare Provider
HIQA	Health Information and Quality Authority
HISI	Health Informatics Society of Ireland
HL7	Health Level Seven International (authority on standards for interoperability)
HPC	Health Professional Card
HSE	Health Service Executive
IMB	Irish Medicines Board
ICT	Information and Communication Technology
ID	Identification (e.g. number, card or code)
IHTSDO	International Health Terminology Standards Development Organisation
IT	Information Technology
LHO	Local Health Office
LSP	Large Scale Pilot
NCI	National Client Index

NHIS	National Health Information Strategy
NSAI	National Standards Authority of Ireland
OECD	Organisation for Economic Co-operation and Development
PCCC	Primary, Community and Continuing Care Directorate
PCRS	Primary Care Reimbursement Services
PHS	Personal Health System
PIN	Personal Identification Number
PPARS	Personnel, Payroll and Related System
PPSN	Public Service Number
R&D	Research and Development
SQL	Structured Query Language
VPN	Virtual Private Network
UHI	Unique Health Identifier
WHO	World Health Organization

6 Annex

6.1.1 Annex 1: Compound indicators of eHealth use by GPs

Compound indicator name	Component indicators	Computation
Overall eHealth use	- 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	- 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	- A1 - electronic storage of individual administrative patient	A1 value
Use of a computer during consultation with the patient	- B2 - Computer use during consultation	B2 value
Use of a Decision Support System (DSS)	- B3a - Availability of DSS for diagnosis - B3b - Availability of DSS for prescribing	Average of component indicators
Transfer of lab results from the laboratory	- D1e - Using electronic networks to transfer prescriptions electronically to dispensing pharmacists?	D1e value
Transfer of administrative patient data to reimbursers or other care providers	- 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	- D1c - Using electronic networks to exchange medical data with other health care providers and professionals	D1c value
ePrescribing (transfer of prescription to pharmacy)	- D1d - Using electronic networks to transfer prescriptions electronically to dispensing pharmacist	D1d value

Dobrev, Haesner et al. 2008

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