eHealth strategy and implementation activities in England

Report in the framework of the eHealth ERA project

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eHealth ERA
Towards the Establishment of a
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About *eHealth ERA* and this report

This report is the outcome of research in the context of the eHealth ERA project (Towards the Establishment of a European Research Area). The project was implemented by empirica GmbH (co-ordinating partner, Germany), STAKES (Finland), CITTRU (Poland), ISC III (Spain), CNR (Italy) as well as EPSRC and Imperial College (United Kingdom), based on a Coordination Action contract with the European Commission.

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

The status of activities described is generally August 2006.

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Executive Summary

Each of the four constituent countries of the United Kingdom (England, Scotland, Wales, and Northern Ireland) has its own, separately administered health service and each has its own strategy for eHealth.

The government's main national programme for healthcare system development in England is the *NHS Plan*, which included plans for increasing investment in information technology to give patients improved diagnosis, information and referral, telemedicine facilities and improved access to information resources on latest treatments and best practice for staff. Its national strategic programme – the National Programme for IT (NpfIT) - aims to connect delivery of the NHS Plan with the capabilities of modern information technologies. Launched in 2002, NPfIT, is one of the largest public sector health IT projects in the world and aims to provide authorised access to patient information whenever and wherever it is needed. Its stated objective is to implement an 'integrated IT infrastructure and system for all NHS organisations in England by 2010', which enables patients to make informed health choices and which increases the efficiency and effectiveness of clinicians and other NHS staff. NPfIT aims to achieve these goals by:

- Creating a NHS Care Records Service (NHS CRS) to improve the sharing of consenting patients' records across the NHS and also provide patient access to their own health records.
- Making it easier and faster for general practitioners (GPs) and other primary care staff to book hospital appointments for patients.
- Providing a system for electronic transmission of prescriptions.
- ensuring a secure broadband network infrastructure is in place to connect all NHS bodies in England.
- Creating a Picture Archiving and Communications System

1 Basic Facts

England is one of four countries in the United Kingdom (UK) which is in North Eastern Europe. The UK is made up of England, Scotland, Wales and Northern Ireland and has a population of 60.6 million inhabitants (July 2006). Approximately 84% of the population live in England, just under 10% live in Scotland, and the remainder live in Wales and Northern Ireland. The UK joined the EU on 1 January 1973 as part of the first enlargement of the community from six to nine members. The UK is a constitutional monarchy and parliamentary democracy.

2 Healthcare system overview

2.1 Basic facts & features of the UK healthcare system

Each of the four constituent countries of the United Kingdom (England, Scotland, Wales, and Northern Ireland) has its own, separately administered health service. All are publicly funded and branded as the "National Health Service" offering broadly the same range of services – it is essentially the administrative arrangements that are different. The four health services operate independently, but there is close cooperation and collaboration to ensure that all citizens receive the same quality of care.

The NHS of each country is responsible for delivering healthcare to its resident population; where appropriate they can be referred for treatment to another country's health service, something that generally happens transparently to the patient. In some border areas residents of one country may receive health services from the neighbouring health service if this is more convenient to them. The NHS operates on the principle of free health care for all and is funded through general taxation.

England

The NHS in England is the responsibility of the Department of Health which operates under the direction of the Secretary of State for Health in England. Separate responsibilities are held by the Secretaries of State for Scotland, Wales and Northern Ireland. NHS Connecting for Health is an integral agency of the Department of Health that is responsible for delivering the National Programme for IT for the NHS in England. The Department of Health is also part of the UK Government, and is responsible for representing the UK internationally in health matters, liaising with the other "home countries" as appropriate.

The health care system comprises a series of groups and divisions with specific area or professional responsibilities, eg for public health, nursing and research and development, the office of the Chief Medical Officer which is responsible for offering expert medical advice to the whole department, the NHS Executive which is responsible for leadership and a range of central management functions, as well as ensuring regional implementation of national policies and monitoring the performance of health authorities and finally there is a separate Minister of State with responsibility for public health. Key decisions about healthcare are taken by local branches of the NHS but overall strategy is left to the Department of Health.
The current structure for health administration in England came into effect on 1 July 2006 when the number of Strategic Health Authorities (SHAs) reduced from 28 to 10. SHAs look after the health care of their region and the boundaries of the majority of the new SHAs are

coterminous with Government Office Regions (GORs). SHAs report to the Department of Health. Health services are divided into primary and secondary services. Secondary care includes servcies provided by hospitals, mental health provision and ambulance services. Primary care covers general practice, dentistry and ophthalmic services and is delivered by Primary Care Trusts. Following a reorganisation in October 2006 there are now 152 Primary Care Trusts.

Although overall strategy and policy is directed by the Department of Health, a fundamental element of the Government's strategy for the NHS is to encourage decentralisation of public services and the creation of a patient-led NHS. An example of local control and ownership of health delivery is the channeling of funding for health care services through Primary Care Trusts as the main commissioning body for their area. The government has also created a new type of NHS Trust - NHS Foundation Trusts - which have been created to devolve decision-making from central Government control to local organisations and communities so that they are more responsive to the needs and wishes of their local people.

Wales

The NHS in Wales is the responsibility of the Welsh Assembly Government. The Welsh Assembly is a devolved administration that draws its authority from the UK Parliament and has responsibility for a number of issues, including health, education, economic development, culture, the environment and transport. *Informing Healthcare Wales* is the National Programme for NHS Wales to develop new methods, tools and information technologies to transform health services for the people of Wales.

Scotland

The NHS in Scotland is the responsibility of the Scottish Executive. Scotland has its own Parliament and Executive again formally drawing its powers from the UK Parliament, and with devolved responsibility for health and other matters. Scotland has its own eHealth strategy administered by the Scottish Executive Health Department.

Northern Ireland

The NHS in Northern Ireland is a little different from the other UK health services in that it has a combined health and social care administration. Northern Ireland retains its own distinct administration under the Northern Ireland Office of the UK Government. Health and social care in Northern Ireland comes under the Northern Ireland Government Department of Health, Social Services and Public Safety with its own eHealth strategy.

2.2 National level health goals

Main issues and strategic targets of the national healthcare policy and implementation in the United Kingdom

The Department of Health's overall aim is to improve the health and well-being of the people of England. More specifically the Department has seven strategic objectives:

- Improve and protect the health of the people of England – with special attention to the needs of disadvantaged groups and areas.
- Enhance the quality and safety of services for patients and users, giving them faster access to services and more choice and control.
- Deliver a better experience for patients and users, including those with long term conditions.
- Improve the capacity, capability and efficiency of the health and social care systems.
- Ensure system reform, service modernisation, IT investment and new staff contracts deliver improved value for money and higher quality.
- Improve the service we provide as a Department of State to –and on behalf of – Ministers and the public, nationally and internationally.
- Become more capable and efficient in the Department, and cement our reputation as an organisation that is both a good place to do business with, and a good place to work.

There are numerous work streams behind each strategic objective and further details can be found in the Department of Health Business Plan 2007-08.

Major currently running national programmes for public health and healthcare system development.

The main vision for the health service in England is outlined in the NHS plan, published in 2000. The *NHS Plan* sets out the government's 10-year strategy for reforming and modernising the NHS and outlines the vision of a health service designed around the patient: a new delivery system for the NHS as well as changes between health and social services, changes for NHS doctors, for nurses, midwives, therapists and other NHS staff, for patients and in the relationship between the NHS and the private sector. The plan outlines a new delivery system for the NHS as well as changes between health and social services, changes for NHS doctors, for nurses, midwives, therapists and other NHS staff. The plan also outlines changes for patients and in the relationship between the NHS and the private sector.

3 Strategic eHealth plans and policy measures

3.1 National eHealth policy

4.1.1 Main actors

Ministries and other organisations that play a role in influencing national eHealth policy

The UK Department of Health is responsible to the Ministry of Health for the overall eHealth policy of England. Regionally based Strategic Health Authorities are responsible for coordinating and performance managing the progress of local National Health Service bodies. NHS Connecting for Health is the agency of the UK Department of Health responsible for delivering the National Programme for IT (NPfIT) in England.

The Scottish Executive Health Department is responsible for overall health policy in Scotland including the development of the eHealth strategy.

In Wales, the Welsh Assembly Government is responsible for the overall health policy of Wales, including eHealth issues, with the main programme of work being *Informing Healthcare*.

The Department of Health, Social Services and Public Safety (DHSSPS) in Northern Ireland have an agreed strategy for eHealth.

4.1.2 eHealth Roadmap: background, targets, progress, prospects

The England eHealth roadmap and corresponding government-level strategic documents

As already highlighted in section 3, the government's main national programme for healthcare system development in England is the *NHS Plan*, which included plans for increasing investment in information technology, electronic booking of appointments for patient treatment, electronic medical records for patients, electronic prescribing of medicines, connecting GP practices to NHSnet to give patients improved diagnosis, information and referral, telemedicine facilities and improved access to information resources on latest treatments and best practice for staff.

The government's vision for IT to support implementation of the *NHS Plan* is set out in the Department of Health's strategic document, *Delivering 21st Century IT Support for the NHS – a national strategic programme,* which was published in 2002. This national strategic programme is concerned with major developments in the deployment and use of Information

Technology (IT) in the NHS. It aims to connect delivery of the NHS Plan with the capabilities of modern information technologies to:

- support the patient and the delivery of services designed around the patient, quickly, conveniently and seamlessly
- support staff through effective electronic communications, better learning and knowledge management, cut the time to find essential information (notes, test results) and make specialised expertise more accessible
- improve management and delivery of services by providing good quality data to support NSFs, clinical audit, governance and management information.

The Department of Health is responsible for national plans in England. The regional Strategic Health Authorities are responsible for coordination and performance-managing the progress of local NHS bodies towards the take-up of the National Programme for IT (NpfIT)

The NPfIT, launched in 2002, is one of the largest public sector health IT projects in the world and aims to provide authorised access to patient information whenever and wherever it is needed. Its stated objective is to implement an 'integrated IT infrastructure and system for all NHS organisations in England by 2010', which enables patients to make informed health choices and which increases the efficiency and effectiveness of clinicians and other NHS staff. NPfIT aims to achieve these goals by:

- Creating a NHS Care Records Service (NHS CRS) to improve the sharing of consenting patients' records across the NHS and also provide patient access to their own health records.
- Making it easier and faster for general practitioners (GPs) and other primary care staff to book hospital appointments for patients.
- Providing a system for electronic transmission of prescriptions.
- ensuring a secure broadband network infrastructure is in place to connect all NHS bodies in England.
- Creating a Picture Archiving and Communications System

The NHS CRS will be introduced gradually in stages across England over several years from 2007. It will mean that over time, NHS organisations will increasingly keep care records on computers that link together. This will allow staff quicker access to information in a safe and secrure way across organisational boundaries. Patients themselves will also have access to an essential summary of their records. Introducing the NHS CRS will take several years. It will enable paper and film records, which can be more difficult to access, to be phased out.

In September 2006, NHS Connecting for Health invited Primary Care Trusts (PCTs) to participate in Early Adopter implementations of the Summary Care Record. The Early Adopter Programme started at the end of 2006, focuses on the General Practice element of the Summary Care Record, enabling access by appropriate health care professionals within a

given Primary Care Trust (PCT) area. The Early Adopter Programme will be fully evaluated, including an independent evaluation, before a full roll out begins. It will be several years before the Summary Care Record is rolled out across England.

Choose and Book is a national service that, for the first time, combines electronic booking and a choice of place, date and time for first outpatient appointments. It revolutionises the current booking system, with patients able to choose their initial hospital appointment, and book it on the spot in the surgery or later on the phone or via the internet at a time that is more convenient to them. Research has consistently shown that patients want to be more involved in taking decisions and choosing their healthcare. The majority of patients who are offered choice view the experience as positive and valuable.

Since summer 2004 the Choose and Book service has been introduced across England. The experience of early adopters has been used to help accelerate the implementation to every health community in the country. From 1 January 2006 all patients requiring a first outpatient appointment have been offered a choice of at least four providers.

The Electronic Prescription Service will enable electronic prescriptions to be generated, transmitted and received so that pharmacists and other dispensers can dispense against them. Over time, dispensers will also be able to submit these electronic prescriptions to a reimbursement authority in order to claim payment. By 2007, every GP surgery (for use by the GPs, nurses and other prescribers working from the surgery) and community pharmacy and other dispensers will have access to the service. In due course, prescribers working from other locations such as walk-in centres or dental practices, will also be included.

N3 is the name for the NHS National Network which provides fast, broadband networking services to the NHS. This high speed network will make it possible to deliver the reforms and new services needed to improve patient care, such as: choose and book, NHS Care Records Service, Electronic Transmission of Prescriptions, Picture Archiving and Communication Systems. N3 is vital to the delivery of NPfIT, providing the essential technical infrastructure through which benefits to patients, clinicians and the NHS from NPfIT can be realised.

The Picture Archiving and Communication Service enables images such as x-rays and scans to be stored electronically and viewed on screens, so that doctors and health professionals can access the information and compare it with previous images at the touch of a button.

Implementation roadmap and main players expected to participate

- The **Department of Health** determines overall health policy for England, delivery objectives and provides funding.

- The **National Programme for IT (NPfIT)** is the programme which has been put in place by the Department of health to provide the information infrastructure. NHS **Connecting for Health** (CFH) is an agency for the Department of Health that is responsible for NHS IT policy including IT standards.
- The **NHS Information Centre** is an independent NHS Special Health Authority that collects, analyses and distributes national statistics on health and social care. It therefore has a key role in defining NHS data standards.
- **NHS Strategic Health Authorities** (SHAs): Although the NpfIT is a national programme led by NHS Connecting for Health, accountability for the delivery of the programme transferred to SHAs on 1 April 2007, as part of the Government's strategy to encourage local control and ownership of health delivery. SHAs are autonomous bodies responsible for performance managing the NHS and coordinating planning activity. There are ten SHAs in England and they are represented in one of three programmes for IT, each of which has a Local Service Provider (LSP).
    - London Programme for IT (LPfIT) has one SHA - NHS London.
    - North Midlands and East (NME) Programme for IT (NMEPfIT) has six SHAs - East Midlands SHA, East of England SHA, North East SHA, North West SHA, West Midlands SHA and Yorkshire and Humber SHA.
    - Southern Programme for IT (SPfIT) has three SHAs - South Central SHA, South East Coast SHA and South West SHA.
- **Local Service Providers** (LSPs): The national infrastructure is being built by LSPs under contract to NHS CFH:
    - BT Capital Care Alliance – LPIT
    - Computer Sciences Corporation – NMEPfIT
    - Fujitsu - SPfIT

Although accountability for delivery has only recently been devolved to SHAs, benefits realisation has always depended on activity at a local level by NHS Trusts. **NHS Primary Care Trusts** are responsible for planning the delivery of health services at a local level. Other types of NHS Trust (eg **Acute, Ambulance, Foundation**) are responsible for actually delivering the services. Some **local government bodies** also have responsibility for delivering some NHS services working in cooperation with (and sometimes jointly) with NHS bodies. The National Programme's role is to create the infrastructure, but the delivery of benefits depends on the ability of NHS bodies to integrate their systems with the infrastructures being set up. The pace and timing depends on a number of factors, most notably local readiness

and the pace at which local organisations can remodel their activities to exploit the potential of the infrastructure.

Preparation and implementation work towards developing the eHealth roadmap

The National Programme for IT described in *Delivering 21st century IT support for the NHS* was launched in 2002, but this built on previous programmes of work including: *Information for Health* published in 1998, the *NHS Plan* (2000), *Building the Information Core* (2001) and *The Wanless reports* (2001/2).

The development of the National Programme has been a public debate with extensive input from a wide range of health informatics practitioners. There have been a number of updates e.g. PACS (picture archiving and communications systems) and QMAS (the Quality Management and Analysis System) were not part of the original programme, laid out in *21st Century IT*.

Since the programme will be implemented over a long period of time, it is inevitable that technology and political drivers will have an influence. Changes, updates and progress are routinely published and debated in a number of public and professional fora. The current schedule is for NPfIT to be implemented across England in phases, with the intention of reaching full functionality and national coverage by 2010.

Main strategic targets stated in the national eHealth roadmap

Phase 0: Firm scope April 2002-April 2003	Develop management structure, capacity and capability *Infrastructure* • Define data standards • Define interchange standards • 100% Consultants with PCs *Application services* • Create first stage of National Health Record Service • Agree XML based EPR System Specification, using open standards *Implementation and Support* • Work with OGC and e-Envoy to streamline procurement • Begin increase of NHS IT capacity and capability
Phase 1: Firm scope April 2003-December 2005	*Infrastructure* • Broadband access (>128kbs) to every clinician & support staff in the NHS, increased bandwidth to minimum -

	2Mbps between trusts and across NHS Net Gateways • Access and authentication available for all NHS staff, implementation of National NHS Directory Service • Domain to domain encryption implemented *Application Services* • National Bookings Service, implemented • National Prescriptions service, 50% implemented • All PCTs, NHS Trusts actively implementing elements of EPRs • Full National Health Record Service implemented, and accessible nationally for out of hours reference • National Patient Record Analysis Service established for 100% of NHS transactions; • Provision of e-learning materials through the NHS U *Quality Management* • Establishment of a Faculty of Health Informatics in the NHS U. • Implementation of Gateway procedures for Information and IT projects *Implementation and Support* • National IT services portfolio established • StHA investment plans accepted (and funding agreed) by National Programme Director
Phase 2: Tentative scope January 2006–December 2007	*Infrastructure* • Broadband access implemented at recommended access speeds across local and wide area networks in the NHS • Secure access mechanisms (e.g Smartcards) for all NHS staff *Application Services* • Full National Health Record Service, with core data and reference links to local EPR systems for full record access; • National Bookings Service, all patient appointments, implemented; • National Prescriptions Service, with full clinician and patient functionality, 100% implemented; • EPR (compliant with new National standard, XML-based specification) systems implemented in all PCTs, all Hospitals; • Picture Archiving and Communications Systems for all acute Trusts • Telemedicine established in all GP surgeries for ECG,

	skin disease • Patient / Citizen Portal available via Internet, Digital TV, wireless devices • Ambulance Telemonitoring implemented in 20% of all emergency response vehicles • Ambulance radio replacement • Home Telemonitoring available in 20% of homes requiring it • Common clinical terms implemented for hospital and primary care • National Knowledge Service fully established.
Phase 3: Tentative scope January 2008–December 2010	• Ambulance Telemonitoring implemented in 100% of all emergency response vehicles • Home Telemonitoring available in 100% of homes requiring it • Unified Health Record (with all appropriate Social care information)

NPfIT implementation started April 2002, although it should be noted that the NPfIT programme built on a great deal of preceding work.

Progress in the implementation of the national eHealth roadmap

Major infrastructure elements of the Programme are in place; as well as the national systems, over 12,000 local systems are in place serving well over 250,000 NHS staff. While eHealth infrastructure is provided by the NPfIT, the delivery of benefits depends on the ability to integrate local NHS systems with the NPfIT infrastructure. Online dissemination activities take place through the websites of the Department of Health and NHS Connecting for Health, and through promotion in person at public conferences. The Programme has also featured frequently in the press. Some of the main achievements to date include:

- ***Electronic Transmission of Prescriptions*** (now the Electronic Prescription Service - EPS) was delivered by the end of December 2004 as an enhancement to the NHS Care Record Spine. After integration testing, live operations commenced on 11 February 2005 with the first compliant GP and pharmacy systems. The first electronic presciptions were were issued in February 2005. To date over 6.5 million electronic prescriptions have been issues (out of a total of some 370 million prescriptions issued per year).

- More than 1.3 million hospital appointments have now been booked electronically at a rate of 10,000 a day and rising accounting for over 20% of NHS referrals for treatment.
- The ***Picture Archiving and Communication Systems (PACS)*** went live in 2005 with the first images being transferred through the network in March of that year. 56 new Picture Archiving and Communications Systems (PACS) systems are now live and more than 80 million digital images have been stored, benefiting over 3 million patients per year.

- Implementation of the ***New National Network*** (N3) began in April 2004. When complete the NHS network will be one of the largest Virtual Private Networks (VPN) in the world. More than 15,000 NHS locations are connected already. All NHS sites are planned to be connected by March 2007.

Success has been measured by NHS Connecting for Health deployment statistics, which show as of 14 May 2007:

- 349,598 NHS staff registered to use the NHS Care Records Service.
- 20,054,549 prescriptions transmitted using the Electronic Prescription Service (EPS).
- 3,604,666 bookings made using Choose and Book.
- 92 Picture Archiving and Communications Systems (PACS) and 224,887,205 images created and stored.
- Fast, reliable broadband access provided by N3 for 19,467 NHS locations supporting over 1.2m staff.
- 249,191 NHS staff registered to use Contact (the NHSmail email and directory service).

The initial components that went live in July 2004 included:

- the **Personal Demographic Service** (PDS) containing identity details of over 48 million patients,
- the **Messaging Servic**e (TMS) handling 220 million messages on an annualised basis,
- **access controls** to ensure that only authorised access points and authorised personnel can connect to the live services,
- the **Choose and Book** facility to allow GP Practices to book appointments for their patients at particular hospitals.

Preliminary plans or experiences in extending eHealth implementation to the field of social care

One of the strategic goals of the National Programme is to deliver a unified Health Record that embraces health and social care. Social care in England is delivered through a quite separate local government organisational structure which has difference accountability and funding streams.

There are few examples of integrated work, although some work has been taking place on the development of an electronic social care record. A major recent development in the social care field is the Department for Education's *Every Child Matters* strategy. NHS CFH is working closely with colleagues in the Department for Education on the IT implications of this.

Existing or planned eHealth cooperation among the UK with other Member States

There is no formal cooperation, but a degree of policy liaison is maintained between the UK health administrations and counterparts in the Republic of Ireland

4.1.3 Dissemination and co-ordination activities

Activities for making the national eHealth roadmap more widely known

The Department of Health and NHS CFH websites have coordinated and disemminated information. A large amount of effort has been put into engaging with professional bodies and taking part in the presentations and conferences on health informatics.

NHS Connecting for Health has a very extensive publicity programme and exploits a variety of media – internet, press, public conferences as appropriate.

A team of National Clinical Leads was appointed in Autumn 2004 to lead on engaging clinicians and NHS managers in planning and preparing for the successful implementation of NpfIT. They communicate between the Programme and the NHS in both directions; have a comprehensive knowledge, understanding and influence of and into the Programme; liaise closely with a Care Record Development Board.

A number of conferences have been or are being held, for example:

- the NHS Care Records Service London clinical engagement conference which will be held on 14 June 2007 and is aimed at London clinicians across all care settings to provide an interactive opportunity to find out the latest
- The Future for Information Sharing in Sexual and Reproductive Health: Making IT Work in March 2007

- What's in IT for me? A joint British Medical Association/NHS CFH conference on 1 February 2007-05-15
- A series of GP engagement forums across England

The CFH website includes a variety of resources, including a Clinical Connections newsletter to provide NPfIT progress reports and interviews with key stakeholders, videos of events and speakers, copies of speaker presentations, reports on forums and other events held and has an interactive board game – Taking the Table-Top Challenge -which aims to encourage staff to discuss NpfIT in the context of their own jobs. It also has leaflets on how different stakeholder groups can get involved in NpfIT and practical guides to CFH for different groups. In addition, separate events have been held for different health professions by CFH and other organisations, including GP Forums, and there have been articles in professional journals.

In addition there are National Advisory Groups which advise on issues of health informatics to support CFH in delivering systems to improve patient safety.

Consultations have also been carried out, eg the Department of Health consulted on its strategy for NHS information quality assurance in March 2004.

A major public information campaign for citizens and patients is planned by CFH for the near future.

Means available to the general public for expressing their opinions on eHealth policies and plans?

The general public can contact the Department of Health directly, or write to their Member of Parliament or the Secretary of State for Health to express their opinion

There has also been formal public consultations. Patient representative groups have also been active in the development of the programme (e.g. the Chair of the NHS Care Record Development Board is the NHS Board level member for Patients and the Public. Focus groups and Opinion polling have also been used and there have also been a number of newspaper and journal articles on ehealth initiatives.

3.2 Investment and Reimbursement framework

Investments for the implementation of eHealth systems and applications supported or funded

NHS spending on ICT is one element of overall NHS funding, channelled through the Department of Health (in England) and Primary Care Trusts. The National Programme for IT is

funded directly by the Department of Health. Training for the use of IT within the NHS is part of this.

Investment from Regional Funds, Structural Funds, World Bank, PHARE Programme, Specific national credit programmes, other sources.

In the UK there is no eHealth investment in the country from the following funding souces: Regional Funds, Structural Funds, World Bank, PHARE Programme, Specific national credit programme.

Reimbursement schemes to support the diffusion and implementation phase of eHealth applications.

Funding for UK health services comes fully from the Government, therefore implementation will come direct from Government funding, so no reimbursement is required

Types of eHealth services eligible for reimbursement

There are no eHealth services which are eligible for reimbursement

4 eHealth deployment status

4.1 eHealth infrastructure

4.1.1 Physical networks

Physical networks available for supporting the provision of eHealth services

The telecommunication backbone is based on broadband networks. There is currently a programme on developing the *New National Network N3* which provides a fast broadband networking service to the NHS.

eHealth networks are based on standard broadband technologies. N3 replaced the previous private NHS communications network. N3 is a secure broadband network infrastructure to connect all NHS bodies in England and supports four major activities:

- Choose and Book, a national system for electronic booking in GP surgeries which provides a choice of time, date and place for first outpatient appointments - by July 2006 the system was due to be accessible to 30% of GP surgeries. As at 14 May 2007 approximately 3.6m bookings had been made using the Choose and Book service.
- NHS Care Records Service, a summary electronic record for all NHS patients in England which is a live, interactive patient record service, available 24 hours a day, by health professionals – as at 14 May 2007 approximately 350,000 NHS staff had registered to use this service.
- Electronic Transmission of Prescriptions which allows prescriptions to be sent electronically from the prescriber to the dispenser and then to the prescription pricing authority - 50% of service was in place by end of 2005. As at 14 May 2007 over 20m prescriptions had been transmitted using this service.
- Picture Archiving and Communication Systems which will enable filmless operation for capturing, storing and displaying radiographic images - should be available to all NHS organisations by 31 March 2007. As at 14 May 2007 there were 92 PACS systems in place.

There are also other eHealth programmes of work outside NPfIT, such as NHS Direct which includes a telephone health line service to provide information about health, illness and health services to enable patients to make decisions about their healthcare and that of their families. NHS Direct includes a website and digital TV service. There is also a £80m programme to support telecare for older people.

Evaluation studies concerning the impact and/or effectiveness of eHealth networks

Some evaluations were undertaken as part of earlier strategic development work predating the National Programme (eg the evaluations of electronic record systems within the former ERDIP progamme, 1998-2000).

4.1.2 Legal and regulatory framework

National legislation addressing data protection, telecommunications, digital signatures, telemedicine/ehealth service provision and health-IT product liability

The various legislation which has been implemented in England to address data protection, telecommunications, digital signatures and eHealth service provision is detailed below. In addition, the Medicines and Healthcare Products Regulatory Agency has the formal responsibility for regulating IT used in healthcare.

Data Protection: The Data Protection Act 1998 covers telecommunications data protection and confidentiality. This links with the Freedom of Information Act 2000 and the Human Rights Act 1998 which attempt to balance the rights and interests of individuals with the freedom to process information and rights of privacy.

Telecommunications: The Communications Act 2003 covers the regulatory framework for the communications sector which encompasses telecommunications and broadcasting.

Digital Signatures: The Electronic Communications Act 2000 covers digital signatures.

National body responsible for overseeing and/or co-ordinating the development and enforcement of the legal and regulatory requirements

The Information Commissioner's Office (ICO) is the UK's independent authority set up to promote access to official information and to protect personal information.

The Information Commissioner reports annually to parliament through the Ministry of Justice and works closely with Government departments, advising them on data protection issues, although it is independent of the Government. The Department for Consitutional Affairs also has a role in developing government policy with respect to information and human rights laws, although some of its responsibilities were passed to the Ministry of Justice in May 2007.

Harmonization to EU-level regulations

National legislation is set against the imperatives and discretions created through EU directives:

Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data (Data Protection Directive) was implemented through the 1998 Data Protection Act (whose main provisions came into force in March 2000 and subordinate legislation was passed in 2000 - Statutory Instrument 2000, No 417 on The Data Protection (Processing of Sensitive Personal Data) Order 2000.

Directive 1999/93/EC of the European Parliament and of the Council of 13 December 1999 on a community framework for electronic signatures was implemented into UK law by the Electronic Communications Act 2000 and the Electronic Signatures Regulations 2002 (Statutory Instrument 2002, No 318).

Statutory Instrument 2002 No 2013 The Electronic Commerce (EC Directive) Regulations 2002 was published in response to **Directive 2000/31/EC** of the European Parliament and of the Council of 8 June 2000 which covered certain aspects of information society services, in particular electronic commerce, in the Internal Market ('e-commerce Directive').

Statutory Instrument 2003 No 2426 The Privacy and Electronic Communications (EC Directive) Regulations 2003 was published in response to **Directive 2002/58/EC** of the European Parliament and of the Council of 12 July 2002 which concerned the processing of personal data and the protection of privacy in the electronic communications sector.

Problems identified with existing or newly introduced legal and regulatory framework

The BBC News website reports on problems with interpreting the Data Protection Act which build on the EC Directive of 1995 which are highlighted by a number of news stories.

After Ian Huntley was convicted of the murders of Holly Wells and Jessica Chapman, it was revealed that Humberside police had deleted records about him. The force had wiped details of sexual allegations against Huntley because it thought it was in accordance with the Act. In December 2003 it emerged that British Gas had failed to inform social services it had cut off the gas supply to an elderly couple, who were later found dead in their home. The supplier said it had tried to comply with the Act. And in the same month, Metropolitan Police Commissioner Sir John Stevens said the Act required "urgent clarification". He pointed to long-term, widespread problems among police bodies interpreting the Act. Sir John said

confusion around the Act had hampered attempts by police to build psychological profiles of offenders and suspects.

The website reports that the Act is often vague on the specifics. For example, the law simply states that information should be kept "no longer than necessary" without giving any precise guidelines, says Ruth Boardman, the co-author of Data Protection Strategy: Implementing Data Protection Compliance. The data user, she says, is required to interpret the law and may often choose to err on the side of caution, meaning records may be deleted too hastily. The law as it stands also applies to almost every organisation - even those which may hold innocuous information.

Suggestions for improvement include restricting the types of information the Act applies to, stripping some of its bureaucracy away and perhaps restructuring parts of the legislation, encouraging industry bodies, including the police, to develop specific guidance so that the complexities of the law could then be translated into specific codes of practice for different industries and services.

In 2000 the Department for Constitutional Affairs carried out a consultation on an appraisal of the Data Protection Act. Issues raised relating to eHealth included the following:

- Some respondents felt that the relationship between the "data controller" and the "data processor" as defined in the Act was unclear, particularly where an organisation was large and complex, such as the NHS
- There were concerns about the interpretation of a number of the terms used, in particular ‘consent’ and 'explicit consent' when it came to the conditions for processing data. A number of respondents were uncertain when a condition other than consent, can be relied upon. Some also saw a problem when consent has to be given on behalf of another person, for example, a minor. Some respondents thought that the conditions were unnecessarily wide. A specific example related to health records where it was suggested that confidentiality and the interests of patients were not best served by the width of the conditions.
- A number of respondents felt that there were real practical problems in meeting some of the obligations imposed by the Act. It was felt that compliance was impracticable when there was a large volume of data and the relationship with the data subject was remote. Even relatively hands-on relationships caused problems. Examples were out-patients and emergency cases in the NHS.

- There was concern about the level of the subject access fee. Some respondents felt that the present fee was too low compared to what was often a large amount of work involved in providing access. There was particular concern about the arrangements in the health sector. Some felt the £50 maximum for access to manual health records disadvantaged data subjects. Others were concerned about the possible reduction to £10 from October 2001. [NOTE: An order has been made retaining the fee at £50 for the time being. The Government will work with the Information Commissioner, in consultation with other key interests, with the aim of finding a long-term solution.]

4.1.3 Education and training on ICT

Education programmes to promote the acquisition of necessary general (or eHealth-specific) ICT skills by the general population

ICT skills training is within the remit of the Department for Education and Skills. Major programmes such as the National Grid for Learning and Learn Direct exist to promote IT and other skills. There are also very widely available and publicly accessible IT skills instruction available through local authority funded activity.

Education programmes to promote the acquisition of necessary general (or eHealth-specific) ICT skills by health care professionals

The NHS Connecting for Health Education, Training and Development (ETD) programme's role is to enable the NHS to make the best possible use of NPfIT products and services through enabling high quality frontline training and development. In addition, an extensive programme of activity was undertaken to promote the use and takeup of the European Computer Driving License by NHS staff – ECDL is a standard NHS requirement.

Education programmes to promote the acquisition of necessary general (or eHealth-specific) ICT skills by health care administrative and support staff

The NHS CFH Education, Training and Development (ETD) programme's role is to enable the NHS to make the best possible use of National Programme products and services through enabling high quality frontline training and development.

The UK Council for Health Informatics Professions (UKCHIP) also promotes various educational programmes and conferences for health informatics professionals.

Success stories with regard to the provision and acquisition of eHealth-related skills

An extensive programme of activity was undertaken to promote the use and takeup of the European Computer Driving Licence by NHS staff - ECDL is a standard NHS requirement.

"Health ICT specialist" and "Chief Information Officer" as a job profile

Health ICT Specialist is a recognised job profile. However a more usual job title used in the NHS is the Information Management & Technology (IM&T) Service Manager who has responsibility for the mangement and performance of IM&T services, for developing IM&T policy and for leading on strategic planning for IM&T services.

The role of a Chief Information Officer includes strategic leadership, planning and co-ordination, and performance management

Specific training curriculum available for the qualification of "Health ICT specialist"

The UK Council for Health Informatics Professions (UKCHIP) was formed in 2002 to promote professionalism in Health Informatics (HI). It operates a Registration Scheme for HI professionals who agree to work to clearly defined standards and also offers educational courses and conferences. However there is no single educational route into health informatics so registration assessment is based on qualifications, experience, previous and continuing development and any other relevant factors

Delivery of education and training programmes

Training for NPfIT functions is part of the NPfIT delivery programme for which NHS CFH is responsible. Local training of NHS staff is the responsibility of local organisations. Health informatics is included as part of appropriate higher education clinical training provided through academic and professional bodies.

Specialist health informatics and ICT training is delivered by academic and professional bodies and private companies. In addition there is an NHS Faculty of Health Informatics which aims to develop a national community of practice for health informatics learning and development, applied research and professional services. The faculty will act as a national focal point for the

study and facilitation of informatics learning and research on behalf of the NHS, working with partners including further and higher education institutes on related interests.

4.2 eHealth applications & services

4.2.1 Electronic Health Records

The NHS Care Records Service is a live, interactive patient record service, accessible 24 hours a day, seven days a week, by health professionals. This is part of the NPfIT programme led by NHS CFH. Start date: 1/4/2005; End date: 2010

4.2.2 e-Prescription

Electronic Transmission of Prescriptions (ETP) is a system to allow prescriptions to be sent electronically from the prescriber to the dispenser and then to the prescription pricing authority. This is part of the NPfIT programme led by NHS CFH. Start date 1/4/2005; End date: 2010.

4.2.3 Health Cards

There are no plans for individual cards at the present time, although all patients have their own unique NHS identifier number which is fundamental for electronic health records.

4.2.4 Health Portals

NHS Direct is a national health portal for citizens which has a health encyclopaedia, self help guide and answers to hundreds of common health questions.

The National Library for Health provides a health library and information service to NHS staff, patients and the public.

The NHS Institute for Innovation and Improvement has a range of resources for healthcare professionals.

The National Institute for Health and Clinical Excellence (NICE) publishes a range of guidance on promoting good health and preventing and treating ill health for health professionals.

The UK eHealth Association is a non-profit making company which represents individuals and organisations interested in the development of eHealth.

4.2.5 Risk Management and Patient Safety

The National Patient Safety Agency has a website with a range of resources for the public and for health professionals.

4.2.6 Patient Identifiers

The NHS Number is a patient's unique identifier, appearing on medical notes, referral letters and other health information. Each number is generated at birth and used thereafter in child health records, at visits to GPs, during hospital out-patient appointments and as part of stays for surgery and treatment.

The NHS Number makes it possible to share information across the NHS safely, efficiently and accurately. So it is fundamental to the introduction of the NHS Care Records Service (NHS CRS) which will give every patient in England an electronic health record, accessible – under strict controls – whenever and wherever they seek care.

4.2.7 Personal Wearable and portable communicable systems

There are many projects piloting portable communication systems. For example the Kent TeleHealth Evaluative Development Pilot which is a scheme to promote the self-management of long term conditions in older people. The Kent pilot involves patients using technology which allows them to monitor their vital signs at home rather than attending their GP practice or having a nurse visit them. The information gathered by clients is then accessible to GPs who can take action if required.

Typical portable communication tools are laptops used in hospital to access patient records and PACS and smartcards which can be used to access the NHS Care Records Service which includes a Personal Demographics Service (national electronic database of patient demographic details such as name, address, date of birth and NHS Number).

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

In some parts of the country traditional hospital based outpatient clinics are being replaced with nurse-run clinics in GP practices. The nurses talk to the patient, collect all the information required on a computer and send this "electronic patient record" over the phone lines to a specialist. The specialist views the record (which could include photographs, X-rays, ECGs or other details as well as text) and uses his computer to send a report back to the patient's GP.

Minor injury units are now being linked to trauma centres. If you attend such a unit, the nurse can send X-rays over the phone line, for a radiologist to view and report back. She can also videoconference with a Consultant in the trauma centre in order to discuss how to manage an injury.

4.2.9 Telemedicine services

A Telemedicine and E-health Information Service (TEIS) is run by the University of Portsmouth. The objectives of TEIS are to bring together those working in the field of telemedicine, telecare and ehealth (including tele-education and training), to encourage them to share information and experience and to provide an information resource on telemedicine activity in the UK. The website includes lots of examples of telemedicine services, for example the use of telepsychiatry in discharge planning in South London and Maudsley NHS Trust and the use of telemedicine in tertiary trauma referrals in West Sussex. There are also lots of example of telemedicine services on the CFH website.

4.3 Interoperability and standards

4.3.1 Technical interoperability

Current status and future plans concerning the adoption and implementation of technical health ICT standards

NPfIT complies with relevant national and international standards, including the UK Government's e-GIF standards. The main architecture is based on HL7. CFH also particpates actively in national and international standards activity.

The NHS Information Standards Board (ISB) is responsible for approving Information Standards for adoption by the NHS based on recommendations of the Appraisal Group assigned to a particular standard. Exhaustive information is available on their website.

Decision-making bodies concerning the use of healthcare coding and classification systems

NHS CFH is advised by the appropriate professional bodies. The NPfIT standard is Snomed CT, developed in conjunction with CAP

Technical standards employed in health ICT applications on the national level

NPfIT complies with relevant national and international standards, including the UK Government's e-GIF standards. The main architecture is based on HL7. The NHS has played an active role in helping develop these standards and compliance with appropriate national and international standards has always been a key element of NHS IM&T strategies.

4.3.2 Semantic interoperability

Semantic interoperability

The NHS Classifications Service is responsible for the development and maintenance of classification data standards used in the NHS

Coding and classification systems in health ICT applications

The NHS Classifications Service is responsible for the development and maintenance of classification data standards used in the NHS. ICD-10, OPCS-4 and SNOMED CT are the systems used in health ICT applications. ICD-10 and OPCS 4 are used in secondary care and Snomed CT is used in primary care.

4.3.3 Interoperability of Electronic Patient/Health Records

Broadly speaking, NPfIT aims to adopt the HL7 architecture for electronic patient records and the NCRS will be a national solution. A common lifelong electronic patient record architecture and structure is currently being developed on a national level.

4.3.4 Accreditation procedures

All NHS systems are required to become NCRS compliant

5 eHealth RTD status

5.1 General information on RTD structure

Main actors in RTD policy setting in England

UK Government, Department of Trade and Industry
Research Councils – MRC, ESRC

Department of Health, which has an overall budget for health R&D of £753m in 2006-07. The Department's R&D strategy is delivered through a National Institute for Health Research.

Main groups directly involved/undertaking RTD activities in England

National Institute for Health Research
NHS Institute for Health and Clinical Excellence
NHS Institute for Innovation and Improvement
130 Higher Education Institutions
UK Clinical Research Collaboration (UKCRC)
Pharmaceutical industry - Association of the British Pharmaceutical Industry (ABPI)
Healthcare industry
BioIndustry Association (BIA)
Charitable organisations

Main focus areas and targets of RTD activities

There are no particular target areas and research in all areas can be funded.

5.2 Research Programmes

An overview of some of the current developments and ongoing telemedicine programmes in the UK is given in an article *Telemedicine in the UK: current status and future prospects* by RSH Istepanian.

The NHS Faculty of Health Informatics aims to develop a national community of practice for health informatics learning and development, applied research and professional services. The faculty acts as a national focal point for the study and facilitation of informatics learning and research on behalf of the NHS, working with partners including further and higher education institutes on related interests.

Resources

Department of Health. 2007. *Department of Health Business Plan* 2007-2008. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_073546

Department of Health. 2004. *A Strategy for NHS Information Quality Assurance*. http://www.dh.gov.uk/en/Policyandguidance/Informationpolicy/Dataquality/index.htm

Department of Health. July 2002. *Delivering 21st century IT support for the NHS*. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4108950

Department of Health, July 2000, *The NHS Plan: a plan for investment, a plan for reform*. http://www.dh.gov.uk/en/Policyandguidance/Organisationpolicy/Modernisation/DH_4082690

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World Health Organization, 1999, European Observatory on Health Care Systems, Health Care Systems in Transition: United Kingdom. http://www.euro.who.int/document/e68283.pdf

Legislation

The Data Protection Act 1998: http://www.opsi.gov.uk/acts/acts1998/19980029.htm
The Communications Act 2003: http://www.opsi.gov.uk/acts/en2003/2003en21.htm
The Electronic Communications Act 2000: http://www.opsi.gov.uk/acts/en2000/2000en07.htm
Statutory Instrument 2000, No 417 on The Data Protection (Processing of Sensitive Personal Data) Order 2000: http://www.opsi.gov.uk/si/si2000/20000417.htm

Websites

Association of the British Pharmaceutical Industry (ABPI): http://www.abpi.org.uk/
BBC Action Network: http://www.bbc.co.uk/dna/actionnetwork/A2454978
BBC News website: http://news.bbc.co.uk/2/hi/uk_news/3344075.stm
BioIndustry Association (BIA): http://www.bioindustry.org/
Department of Health: www.dh.gov.uk
Department of Health R&D Policy: http://www.dh.gov.uk/en/Policyandguidance/Researchanddevelopment/index.htm
The Information Commissioner's Office (ICO): http://www.ico.gov.uk/
Medicines and Healthcare Products Regulatory Agency: www.mhra.gov.uk
National Institute for Health Research: http://www.nihr.ac.uk/
National Library for Health: http://www.library.nhs.uk/about/default.aspx
National Patient Safety Agency: http://www.npsa.nhs.uk/
NHS Connecting for Health: www.cfh.nhs.uk
NHS Direct: http://www.nhsdirect.nhs.uk/
NHS Faculty of Health Informatics: http://www.informatics.nhs.uk/index.html
NHS Information Centre: http://www.ic.nhs.uk/
NHS Institute for Health and Clinical Excellence: http://www.nice.org.uk/
NHS Institute for Innovation and Improvement: http://www.institute.nhs.uk/
NHS Information Standards Board (ISB): http://www.isb.nhs.uk/
Office of National Statistics: http://www.statistics.gov.uk/geography/england_health.asp
Telemedicine and E-health Information Service (TEIS) (http://www.teis.port.ac.uk/)
UK Clinical Research Collaboration (UKCRC): http://www.ukcrc.org/
UK Council for Health Informatics Professions (UKCHIP): http://www.ukchip.man.ac.uk/Home

UK eHealth Association - http://www.ukeha.co.uk/about.asp

Wales

NHS in Wales: http://www.wales.nhs.uk/sites3/home.cfm?OrgID=452
Welsh Assembly Government: http://www.wales.gov.uk
The Welsh Assembly, *Informing Healthcare Wales*: http://www.wales.nhs.uk/IHC

Scotland

NHS in Scotland: http://www.show.scot.nhs.uk/
Scottish Executive: http://www.scotland.gov.uk
Scottish Executive Health Department's eHealth strategy:
http://www.ehealth.scot.nhs.uk/pdfDocs/National%20eHealth%20IMT%20Strategy%20April%2004%20final%20draft.pdf

Northern Ireland

NHS in Northern Ireland: http://www.healthandcareni.co.uk
Northern Ireland Office of the UK Government: http://www.nio.gov.uk
Northern Ireland Government Department of Health, Social Services and Public Safety:
http://www.dhsspsni.gov.uk
Northern Ireland Government Department of Health, Social Services and Public Safety's eHealth strategy: http://www.dhsspsni.gov.uk/ict-strategy.pdf

