



National Audit Office

The National Programme for IT in the NHS: Progress since 2006

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The National Programme for IT in the NHS: Progress since 2006

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GLOSSARY

Acute Trusts	Hospitals providing health care services, including some which provide specialised care in a particular field and others attached to universities which help to train health professionals. There are 169 Acute Trusts in England.
Care Record Guarantee	Sets out the principles that the Department of Health and the NHS will apply in handling electronic care records, covering areas such as who will be able to access a patient's records and what information they will be able to see.
Choose and Book	The national electronic referral service which gives patients a choice of time and place for their first outpatient appointment, and allows the appointment to be booked using the Internet, a telephone booking service or a GP IT system.
Clinical functionality	IT system functionality which supports NHS staff in treating patients by providing, for example, clinical notes, test ordering, results reporting, care planning and clinical decision support. This functionality is distinct from administrative functionality which records patient details and assists with management processes, such as the scheduling of clinics.
Deployment	The implementation of a system, such a new care records system. Where a system is to be delivered in a number of releases, implementation of the first release is counted as a deployment, and subsequent releases as upgrades.
Detailed Care Record	Part of the NHS Care Records Service, held in a data centre operated by one of the Local Service Providers and accessible to a patient's GP and in community and hospital care settings. The Detailed Care Record is intended to be the single fully detailed record of a patient's medical history and treatment.
Electronic Prescription Service	The service that allows GPs and other prescribers working in primary care to generate and transmit electronic prescriptions, which can be downloaded by the dispensing pharmacy.
Foundation Trusts	Hospital Trusts which are independent, not-for-profit public benefit corporations, with members drawn from patients, the public and staff and with more financial and operational freedom than other NHS Trusts. There are currently 88 Foundation Trusts in England, which are included within the Trust figures shown elsewhere in this report.
GP Systems of Choice	The scheme through which the NHS is funding the provision of GP clinical IT systems in England. GP practices are able to choose between systems provided by the Local Service Provider or by other suppliers on an approved list.
GP to GP transfer	The system which enables patient records to be transferred electronically and securely between GP practices when a patient changes GP.

HealthSpace	A secure website where patients can store and access their personal health information, such as height, weight and blood pressure. It also allows patients who have registered to view their Summary Care Record online.
Legitimate relationship	Staff involved in a patient's care are considered to have a 'legitimate relationship' with that patient. Access to a patient's care records will be limited to those staff who have a legitimate relationship with the patient concerned.
Local Service Provider	There are three Local Service Providers – BT in London, Fujitsu in the South and CSC in the North, Midlands and East. They are responsible for working with the local NHS to deliver National Programme for IT systems and services at local level, including the new care records systems, in line with the requirements set out in their contracts with the Department of Health.
Lorenzo	The care record software being developed by iSOFT which is to be deployed by CSC to Acute Trusts, Mental Health Trusts and Primary Care Trusts in the North, Midlands and East.
Mental Health Trusts	Trusts which provide health and social care services for people with mental health problems. There are 59 Mental Health Trusts in England.
Millennium	The care record software developed by Cerner which is being deployed by Fujitsu to Acute Trusts, Mental Health Trusts and Primary Care Trusts in the South, and by BT to Acute Trusts in London.
N3 network	Provides IT infrastructure, network services and broadband connectivity linking every NHS site in England including hospitals and GP surgeries, and non-NHS sites providing NHS care.
National Programme for IT Local Ownership Programme	The programme under which accountability for implementing the National Programme for IT, and for realising the benefits, transferred to the Strategic Health Authorities from 1 April 2007.
NHS Care Records Service	An electronic care record management service, which will provide every patient in England with an electronic care record and allow authorised NHS staff access to the records of patients in their care. There are two elements to the NHS Care Records Service – the Summary Care Record and the Detailed Care Record.
NHS Connecting for Health	The part of the Department of Health whose main responsibility is to manage at national level the National Programme for IT in the NHS. NHS Connecting for Health is also responsible for other existing business-critical IT systems in the NHS.
NHS Connecting for Health Service Desk	Supports users of the national and local IT systems provided under the National Programme for IT by providing a helpline, e-mail and Internet logging facility for technical questions about the systems and managing incidents to resolution. The Service Desk is run by Fujitsu.
Picture Archiving and Communications Systems	Enables images such as X-rays and other medical scans to be stored electronically and viewed on screens, allowing NHS staff to access images at different times and from different locations. Also includes a Radiology Information System to help manage data and workflows within the imaging department.
Primary Care Trusts	Responsible for assessing local needs and commissioning health care services for their local community; and for providing community health services. There are 152 Primary Care Trusts in England.

Quality Management and Analysis System	Gives GP practices and Primary Care Trusts evidence and feedback on the quality of care delivered to patients, measured against national achievement targets, and calculates the payments due to GP practices.
Registration Authority	Responsible for verifying the identity of NHS staff who need to use the NHS Care Records Service and related systems and services, including Choose and Book and the Electronic Prescription Service; and issuing Smartcards and passcodes, which grant NHS staff access to patient information according to their role.
RiO	The care record software developed by CSE Servelec which is being deployed by BT to Mental Health Trusts and Primary Care Trusts in London.
Role-based access	The principle that the level of access a user has to information held on the NHS Care Records Service and associated systems varies according to their role, with authorised users able to access only the information they need to carry out their role. So, for example, a GP will see more information than a GP receptionist. The level of access is set within a user's Smartcard.
Secondary Uses Service	The part of the Spine which provides analysis and reporting facilities for purposes other than the direct care of patients, such as examining public health trends, analysing the effectiveness of treatments and resource planning in the NHS.
Senior Responsible Owner	The individual responsible for ensuring that a project or programme meets its objectives and delivers the projected benefits.
Smartcard	A plastic card containing the user's name, photograph and unique identity number and an electronic chip which, when used in conjunction with a unique passcode, allows authorised users to access the NHS Care Records Service.
Spine	A group of eight applications which underpins the NHS Care Records Service – three applications hold care record data; four are security applications to restrict access to only accredited users; and one is a messaging service, providing interfaces between Spine data and other services, such as Choose and Book and the Electronic Prescription Service.
Strategic Health Authority	Responsible for developing plans for improving health services in their local area; making sure local health services are of a high quality and performing well; and acting as a link between the Department of Health and the NHS to ensure national priorities are integrated into local plans. There are ten Strategic Health Authorities in England.
Summary Care Record	Part of the NHS Care Records Service, held on the Spine and containing those elements of the Detailed Care Record that are important in supporting unscheduled care or the transfer of care between providers, such as demographic details and key medical information.

SUMMARY

1 Launched in 2002, the National Programme for IT in the NHS (the Programme) is designed to reform the way the National Health Service in England uses information, and hence to improve services and the quality of patient care. The Programme is not just an information technology programme but part of a wider change programme within the NHS. It will involve substantial organisational and cultural change to be successful, and is dependent on the deployment of systems in a highly and increasingly devolved NHS. In addition, the context within which the Programme is being delivered is complex and constantly changing, with new requirements arising from policy and operational changes in the NHS.

2 The Programme is managed at national level by NHS Connecting for Health, part of the Department of Health, and the Chief Executive of the NHS is the Senior Responsible Owner for the Programme. Since 2007 responsibility for delivery has been shared with the local NHS, with the Chief Executives of the ten Strategic Health Authorities responsible for implementation and benefits realisation in their part of the NHS.

3 This is the second report by the National Audit Office on the Programme. Our first report, in June 2006¹, was followed in March 2007 by a report by the Committee of Public Accounts², to which the Government responded in July 2007³. We have carried out this further study to review how the Department has responded to the Committee's conclusions and recommendations and to examine more generally the progress being made in delivering the Programme.

4 This report, Volume 1, sets out our main findings, together with our conclusions and recommendations. It is supported by a Volume 2 of 'project progress reports', which provide details of the development, deployment, service availability, usage and costs of each of the main components of the Programme. Details of our study methods are set out in Appendix 1.

Our key findings on progress in delivering the Programme

Progress against time

5 At the outset of the Programme, the aim was for implementation of the systems to be complete and for every patient to have an electronic care record by 2010, although the timetable from 2006 was described as tentative. While some parts of the Programme are complete or well advanced, the original timescales for the Care Records Service – one of the key components of the Programme – have not been met.

Summary Care Record

6 Implementation of the Summary Care Record is in the early stages. Deployment began in five 'early adopters' in March 2007 after a delay of just over two years. At 31 March 2008 two of the five early adopters (Bolton and Bury Primary Care Trusts) were uploading their patient records to the system; the remaining three had public information campaigns underway but had not yet begun to upload records. An evaluation of the early adopter programme will inform the national roll-out of the Summary Care Record to the remaining 147 Primary Care Trusts.

¹ *The National Programme for IT in the NHS* (HC 1173, Session 2005-06).

² *Department of Health: The National Programme for IT in the NHS* (Twentieth Report of Session 2006-07, HC 390).

³ *Treasury Minute on the Twentieth Report from the Committee of Public Accounts* (Session 2006-07), Cm 7125.

Detailed Care Records

7 To support the creation of Detailed Care Records, the Local Service Providers (BT in London, Fujitsu in the South and CSC in the North, Midlands and East) are implementing electronic care records systems in a series of releases. The scale of the challenge in developing and deploying these systems in the NHS has proved far greater than expected, and the timescales the Local Service Providers originally agreed with NHS Connecting for Health proved unachievable.

8 In London and the South, early releases of Cerner's Millennium product provide some of the functions required, with more clinical functionality planned for later releases. In the North, Midlands and East, development of iSOFT's Lorenzo system has taken much longer than originally planned and the first release is now expected to be available for deployment at three early adopter Trusts in summer 2008, with full roll-out planned from autumn 2008. In the interim, the Local Service Provider is implementing an existing care records system, upgraded to meet the requirements of the Programme.

9 The new care records systems are being deployed in Trusts, but at a slower pace than originally planned. At 31 March 2008, a total of 128 deployments had taken place, including 34 in Acute Trusts (**Figure 1**). While the most deployments have been made by CSC in the North, Midlands and East, these are of the interim systems that will be used until Lorenzo is available.

10 Following the transfer of accountability for implementation to the local NHS in April 2007, the Strategic Health Authorities and Local Service Providers

have been developing plans for future deployments, with the aim of scheduling a rolling annual programme. Revised outline plans are now in place for London and the North, Midlands and East, with the plans for the South under discussion. Taking the country as a whole, the final releases of the care records software are scheduled to be deployed from 2009-10 to 2014-15.

Other elements of the Programme

11 Some other elements of the Programme are now fully deployed across the NHS and some have been delivered ahead of schedule. Volume 2 of this report sets out details of the progress made on each element of the Programme.

12 The N3 network and releases of the Spine, which together form the infrastructure of the Programme, have been deployed on or ahead of schedule. For example, 18,000 NHS sites were connected to N3 by January 2007, two months ahead of target. Similarly, deployments of the variety of other systems, which have been added to the scope of the Programme, have met the planned timescales. For example, all Acute Trusts now have the Picture Archiving and Communications Systems for digital X-rays and other images.

13 As well as the Care Records Service, the original scope of the Programme included an electronic booking service, which became Choose and Book, deployment of which is nearly complete. In addition, an electronic prescription service now enables the majority of GPs and pharmacies to issue electronic prescriptions. Paper prescriptions will continue to be required, however, until the second release of the software is deployed, which cannot begin until GP and pharmacy systems have been accredited.

1 Deployments of electronic care records systems under the Programme at 31 March 2008

Area	Local Service Provider	Acute Trusts		Mental Health Trusts		Primary Care Trusts	
		Number of Trusts	Number of deployments	Number of Trusts	Number of deployments	Number of Trusts	Number of deployments
London	BT	31	4	10	6	31	20
South	Fujitsu	41	9	14	1	31	7
North, Midlands and East	CSC	97	21	35	13	90	47
Total		169	34	59	20	152	74

Source: NHS Connecting for Health

NOTES

- Two of the deployments in Acute Trusts in London pre-date the Programme but have since been integrated into the Programme, with services now provided by the Local Service Provider.
- The deployments in the North, Midlands and East are of iPM, the interim solution, to be replaced later by releases of Lorenzo, the strategic solution, which will require Trusts that take iPM to implement a further deployment once Lorenzo is available.
- This Figure does not include deployments of GP systems, which were not the focus of this report.

Our conclusion on progress against time

Current indications are that it is likely to take some four years more than planned – until 2014-15 – before every NHS Trust has fully deployed the care records systems. Until Lorenzo is available and has started to be deployed, there remains a particular uncertainty over timing in the North, Midlands and East. Good progress is being made with other elements of the Programme.

Progress against cost

Estimated cost of the Programme

14 The estimated cost of the Programme is currently £12.7 billion (at 2004-05 prices) (Figure 2). As well as central costs paid and recorded by NHS Connecting for Health, the total includes estimates of the local costs incurred in deploying the systems. There remains some uncertainty around the estimates of local costs, however, principally because they are taken from business cases compiled by Trusts in 2003-04. The Department collects information on local expenditure via an annual survey of the NHS, though the survey does not distinguish between expenditure on the Programme and other investment in IT. The Department is to supplement the survey for 2007-08 with research at a sample of local sites, and for future years it will work with the NHS to develop an improved approach to capturing information on local expenditure.

15 The estimate in our first report on the Programme was £12.4 billion. Though the £12.7 billion in this report is still an estimate, there is now better information on costs. A reconciliation between the figure in our first report and the current estimate is shown in Figure 7. More detailed information on costs is also set out in Figures 6 and 8 and Volume 2 of this report. Since the start of the Programme, there has been an increase of £678 million (11 per cent) in the value of the core contracts, due mainly to the purchase of increased functionality, though there have been no increases in the cost of individual elements purchased under the original contracts. The remaining increases on the core contracts have resulted from supplier and sub-contractor changes. There have also been reductions in some cost estimates as costs have become more certain.

Expenditure to date

16 At 31 March 2008, spending on the Programme totalled £3,550 million. Spending on the core contracts of £1,933 million was 44 per cent below what was originally profiled (£3,428 million), reflecting the slower deployment of the care records systems described above.

2 Estimated cost of the Programme at 31 March 2008 (at 2004-05 prices)

Category	£ million	£ million
Core contracts	6,805.5	
Products added to the scope of the Programme	665.8	
Other central costs	1,599.0	
Total central costs		9,070.3
Local costs		3,585.9
Total		12,656.2

Source: NHS Connecting for Health

17 Suppliers are paid only when services are proven to have been delivered and working, and in some cases they have not been paid for over 12 months after the deployment of systems in NHS Trusts. In the South, where there have been the most deployments in Acute Trusts of the first release of the strategic (i.e. not interim) care records system, the Local Service Provider has yet to be paid for over half of the deployments.

18 The Programme's contracts were based on the assumption that all Trusts would take the new systems at some point. In the event that the Local Service Providers do not receive the expected revenue for reasons solely due to the Department (for example, where a Trust elects not to deploy the system), the Department has to make a payment to the supplier. At 31 March 2008, payments totalling £36.1 million had been paid under these arrangements. Of this, £30.3 million related to care records systems in London and the North, Midlands and East (of which £29.1 million will be deducted from the charges if the deployments subsequently go ahead, with the remaining £1.2 million irrecoverable) and £5.8 million related to the Picture Archiving and Communications Systems in the North, Midlands and East (all irrecoverable).

19 If suppliers miss key milestone dates, they incur 'delay deductions', which they can earn back. From the start of the Programme to 31 March 2008, deductions of £26.3 million were made. Of this, the Department retained £9.5 million and suppliers earned back £10.1 million. The remainder was still available to be earned back.

Our conclusion on progress against cost

The estimated total cost of the Programme is broadly unchanged. The cost increases that have occurred are mainly due to the purchase of increased functionality. It remains difficult to produce a reliable estimate of local costs. Expenditure to date has been less than was profiled.

Progress in realising benefits

20 The Department published the first annual benefits statement for the Programme, for 2006-07, in March 2008, later than the Department's commitment to the Committee of Public Accounts to publish by the end of 2007. The statement drew on information from some 20 per cent of NHS organisations where the Programme's systems were in daily use and the deployments were sufficiently mature to start to draw conclusions. The statement reported:

- estimated financial savings to 31 March 2007 of £208 million, over 90 per cent of which related to the N3 network; and
- estimated annualised recurrent savings of £119 million, which would result in total savings of £1.1 billion over the 10 years to 2013-14.

21 The main aim of the Programme was to improve services rather than reduce costs, but the Department expects that the total savings will prove to be considerably higher than the current estimate of £1.1 billion as more of the Programme's systems are fully deployed across the NHS, although there is no baseline against which to assess the benefits that are in due course achieved. It is developing its approach to measuring the benefits and the first statement was being put together at the same time as we carried out our work for this report. The statement has not yet been subject to audit.

22 At Trust level, the Picture Archiving and Communications Systems have yielded the most tangible benefits to date, for example in helping to reduce diagnostic waiting times. The Programme has also brought wider benefits, such as improved IT skills among NHS staff. There is a large amount of work now to be done on benefits realisation, in particular to drive benefits from the new care records systems at local level where the Strategic Health Authorities and Trusts have so far focused largely on the practicalities of getting the systems deployed.

Our conclusion on progress in realising benefits

Some benefits from the Programme, including financial savings, are starting to emerge. Work to identify and measure all actual and potential benefits systematically is at a very early stage.

Technical performance of the systems

23 NHS Connecting for Health monitors the performance of suppliers against targets for service availability, response times (i.e. how quickly the system responds when it is being used) and the time taken to fix problems. Over the 18 months to March 2008, suppliers achieved most of the service availability targets (most commonly for a service to be available for 99.9 per cent of the time).

24 If performance falls below the level specified in the contract in any month, the supplier incurs performance deductions. The deductions are earned back if the supplier rectifies the performance failure for the subsequent three months; otherwise the Department keeps the money. From the start of the Programme to 31 March 2008, performance deductions of £14.2 million were incurred (three per cent of the total service charges). Of this, the Department retained £5.7 million and suppliers earned back £1.8 million. The remainder was still available to be earned back.

25 All the Trusts we visited had experienced some technical problems with the new care record systems, and there had been some dissatisfaction, especially in the period following a deployment, as is often the case with IT programmes. Many staff had come to prefer the new system to the one it had replaced, though some continued to be dissatisfied, for example where issues they had raised had not yet been dealt with.

Our conclusion on technical performance of the systems

Suppliers have largely met the targets for service availability and performance deductions have been applied where there have been service failures. Trusts have experienced some technical problems in using the new care records systems, especially in the period following a deployment.

Our key findings on the challenges to be managed for the successful delivery of the Programme

Challenge 1: Achieving strong leadership and governance

26 The Chief Executive of the NHS is the Senior Responsible Owner for the Programme as a whole. Though all the Programme's major components have been procured centrally, much of the implementation has to be locally driven. In October 2006 the Department initiated the 'National Programme for IT Local Ownership Programme' to strengthen local ownership and governance, and re-position the Programme as part of mainstream NHS business, and in April 2007 the ten Strategic Health Authorities became accountable for implementation of the Programme and realisation of its benefits for their part of the NHS.

27 The Local Ownership Programme has been widely welcomed by people working in the NHS and other stakeholders, although its impact has in the main yet to be felt. In the highly devolved NHS, the practical reality for the Senior Responsible Owner for the Programme and for the Strategic Health Authorities' accountability in their areas is not straightforward. So, for example, decisions about when a new care records system should be deployed lie with Trust Boards and their Chief Executives, rather than with the Strategic Health Authorities.

28 On a Programme of this size and complexity and in such a highly devolved environment, clear, realistic communications about attributes of the Programme such as progress against time and cost, and system performance, are especially important. Large volumes of data are available to help manage the Programme, though communications have tended, to date, to focus on achievements rather than what remains to be done. Our difficulty, in producing this report, in collating the Programme's current position to a reasonable degree of precision, reinforced our impression that reporting and communications about the Programme could be improved, particularly in relation to the deployments by the Local Service Providers. To this end, since November 2007 NHS Connecting for Health has been developing an electronic tool which is intended to provide a 'roadmap' of progress across the Programme.

Our conclusion on achieving strong leadership and governance

Local accountability for delivery of the Programme has been strengthened, though the new arrangements are still bedding in. Reporting and communicating progress on the Programme as a whole is challenging because of the volume of data and difficulties in clearly collating the state of play on every attribute of the Programme's various elements.

Challenge 2: Maintaining the confidence of patients that their records will be secure

29 In January 2007 the Department appointed a Patient Lead for the Programme to raise the profile of patient engagement work, where the main focus at present is the introduction of the Summary Care Record. The Record will be accessible to NHS staff involved in a patient's care anywhere in England, though patients can choose not to have a Record created or for it not to be shared. Early indications from the early adopter areas are that only very small proportions of patients are choosing not to have a Summary Care Record or for it not to be shared.

30 A key factor in whether patients choose not to have a Summary Care Record will be whether patients and GPs are confident that data will be secure and handled appropriately. NHS Connecting for Health has set out policies on secure processing, transmission and storage of patient data, and a range of controls have been put in place to prevent unauthorised access to data. For example, the N3 network and NHSmail system are protected by multiple security measures and communications are encrypted to protect the transfer of patient data.

31 Security also depends on the actions of the NHS and individual members of staff. To help provide assurance about data security and confidentiality, the Department and the NHS have developed a 'Care Record Guarantee', setting out the principles that will be applied in handling electronic care records. Access to care records is controlled through Smartcards and passcodes, and individuals are granted access to information based on their role and level of involvement in patient care. Inappropriate use of health records may lead to disciplinary measures and possibly legal proceedings, and access can be audited. In the light of concerns about public sector data protection and the security of information being transferred between locations and organisations, the Strategic Health Authorities are conducting a detailed review of all aspects of data security across their part of the NHS.

Our conclusion on maintaining the confidence of patients that their records will be secure

Greater sharing of patient records brings new risks. Ultimately security depends on the actions of individual NHS staff, and there are a range of controls and protections in place. The NHS potentially has superior knowledge of who has accessed care records than it had prior to the Programme.

Challenge 3: Securing the support and involvement of clinicians and other NHS staff

32 The most recent survey of NHS staff, carried out in May 2007, found increases in levels of familiarity with the Programme and most staff – including 67 per cent of nurses and 62 per cent of doctors – thought the systems would improve patient care. Staff having access to patient information when they need it was rated as the most important of a series of potential benefits. The survey also found that, aside from information managers, less than 30 per cent of the other groups of NHS staff had had an opportunity to shape decisions about the new systems, although the majority did not consider they had a lot to contribute to the planning of IT changes.

33 In the last two years NHS Connecting for Health has taken steps to strengthen its mechanisms for clinical engagement, including appointing a Chief Clinical Officer to enhance clinical leadership of the Programme. In addition, the network of National Clinical Leads, who act as advocates for the Programme and facilitate communication between NHS Connecting for Health and NHS staff, has been expanded. NHS Connecting for Health has also involved clinicians and other NHS staff directly in the development of the Programme's systems to help ensure the products are fit for purpose. For example, a team of NHS staff has been established to assist with developing the Lorenzo care record software.

Our conclusion on securing the support and involvement of clinicians and other NHS staff

The arrangements for engaging with clinicians and NHS staff, and involving them in the development of the systems, have been strengthened. The latest survey indicates that most NHS staff expect the Programme to improve patient care and patient safety. There is, however, still progress to be made before all staff are convinced of the benefits of the Programme.

Challenge 4: Managing suppliers effectively

34 The three Local Service Providers told us that the scale and complexity of the Programme made it extremely challenging. They described how it can be difficult to plan and deploy resources where progress relies on many decisions necessarily made at local level, and how they cannot make progress simply by 'working to the contract' but need to be highly flexible to meet NHS requirements. All have boosted capacity since the outset, in part prompted by NHS Connecting for Health. In addition, the contracts with BT and CSC have been reset to reflect changing circumstances (including the novation of the contracts for the North East and the East from Accenture to CSC) and the need for greater flexibility than originally envisaged. The resetting has established more realistic timetables for deploying the care records systems and has incorporated cost changes arising largely from the purchase of increased functionality. The contract with Fujitsu is in the process of being reset.

35 Relations between NHS Connecting for Health and the Local Service Providers have been maturing, with both sides gradually developing the confidence in each other to work together to deal with the uncertainties and changes that arise during system development and deployment. Both described a relationship that is increasingly collaborative and based on partnership, with aligned objectives to deliver the Programme. Under the Local Ownership Programme, relations between the NHS and the Local Service Providers are still relatively immature but improving. Across the country, the NHS Trusts we visited commented positively on the working relations they had enjoyed with Local Service Provider staff during the deployment process.

Our conclusion on managing suppliers effectively

Relationships between NHS Connecting for Health and suppliers have matured, bringing much needed flexibility to the Programme. Until the process of contract resetting is complete, there remains a degree of uncertainty in relation to the South.

Challenge 5: Deploying and using the systems effectively at local level

36 Implementing a new care records system in a Trust entails substantial additional work, and places an inevitable burden on both clinical and administrative staff. During our visits we saw that NHS staff are demonstrating huge effort and commitment to make deployments go as smoothly as possible, and we saw clear evidence of Trusts learning from the experience of others.

37 Planned 'go live' dates had been missed in most of the Trusts we visited, in some cases on more than one occasion, usually as a result of over-optimism about the time required to prepare. Drawing on experience, Local Service Providers are now expecting the planning, preparation and testing with the Trust and Strategic Health Authority prior to the 'go live' date to take on average around a year, depending on the complexity of the deployment.

38 To realise the benefits of a new care records system Trusts need to understand how it will affect their work processes, and if necessary redesign them to get the most out of the system. Training is also important in ensuring benefits are realised and was most effective where it was tailored to reflect specific roles. The value of training was, however, diminished by the fact that the training environment provided to Trusts differed from the live system they were deploying.

39 Deploying a new care records system has a large operational impact, and an important lesson has been the value of having high level clinical and managerial leadership of the change. All the Trusts we visited recognised the importance of engaging staff and had involved clinicians in the deployment process. Although increased functionality is planned for later releases, the limited clinical functionality provided to date had made engagement more difficult.

40 The NHS Connecting for Health Service Desk, run by Fujitsu, deals with technical issues that cannot be resolved at local level. During our visits, feedback was that the performance of the Service Desk was universally poor. NHS Connecting for Health and Fujitsu recognise there have been problems with the operation of the Service Desk and are taking steps to improve performance.

41 While the Choose and Book system is now nearly fully deployed, utilisation has been lower than expected, with 6.7 million bookings, against an original forecast of 39 million, by January 2008. Usage has been rising, and around half of new outpatient appointments are now being booked through Choose and Book, though there is wide variation in utilisation rates between Primary Care Trusts, ranging from over 90 per cent to below 20 per cent.

Our conclusion on deploying and using systems effectively at local level

The original unachievable timescales for the Care Records Service as a whole have been mirrored in the deployment of the care records systems at local level, and raised unrealistic expectations at times. Implementing the new systems entails substantial extra work and Trust staff are demonstrating high levels of commitment. NHS staff and Local Service Providers are learning from experience to make each new deployment go smoothly.

Our overall conclusions

The Department is taking action to progress all the recommendations which it accepted from the Committee of Public Accounts report.

All elements of the Programme are advancing and some are complete, though delivering a nationally specified Programme into the highly devolved NHS continues to be an enormous challenge. For the Care Records Service, the original timescales proved to be unachievable, raised unrealistic expectations and put confidence in the Programme at risk. While the Programme costs have largely held, the timetable for the Care Records Service has slipped.

The original vision for the Programme nevertheless remains intact and still appears feasible. The major outstanding challenge is to finish developing and deploying the care records systems that will help NHS Trusts to achieve the Programme's intended benefits of improved services and better patient care.

Our recommendations

42 We make the following recommendations outlining the actions that we consider necessary to realise the Programme's vision, while also achieving value for money.

- a** **There is considerable uncertainty about when the care records systems will be fully deployed and working across the country.** It is important that timelines for deploying the systems are realistic, and based on accumulated experience and evidence of what is achievable. NHS Connecting for Health and the Strategic Health Authorities should communicate the deployment plans that are being developed, drawing a distinction between firm commitments in the near future and the less certain timelines that apply further ahead.
 - b** **The North, Midlands and East area does not yet have the strategic system to support its care record service because of the time taken to develop Lorenzo.** The delays in developing Lorenzo make it even more important to get the product right and win the confidence of NHS staff. Current plans are to have the first release available for deployment at three early adopter Trusts in summer 2008, with full roll-out planned from autumn 2008. Given the experience of deploying other care records systems within the Programme, however, this timeframe may prove over-ambitious. Before the system is rolled out to the rest of the North, Midlands and East, NHS Connecting for Health and the Strategic Health Authorities should carry out rigorous testing to ensure the system deployed in the early adopters works as required, and make the lessons learned from the deployments visible to NHS staff.
 - c** **It is difficult to report reasonably precisely the state of play on the many different elements of the Programme.** For reporting within the Programme, NHS Connecting for Health should develop regular reporting on system development, deployment, cost and performance, based on some of the information presented in this report and covering the amount of work remaining to be done as well as progress to date. As part of this reporting, the Local Service Providers and the NHS should agree and regularly update the schedule for future deployments of new care records systems in each of the three areas. Communications with NHS staff and externally to Parliament and the public need to draw on the same information, and focus more on the Programme's central component, the Care Records Service.
 - d** **Some Trusts have still to be convinced of the benefits of taking up the Programme's care records systems.** Planning for future deployments has to take account of Trusts' concerns about the benefits of the new systems relative to the systems they currently have, the amount of organisational change required, and the impact the deployment may have on the ongoing operation of the Trust. To help produce plans that are realistic at the same time as driving the Programme forward, Strategic Health Authorities need to employ or draw on people with programme management skills who can work with Trusts and Local Service Providers to address these issues and develop deployment plans that meet Trusts' business needs.
 - e** **The Programme's emphasis on benefits realisation is increasing but is not yet sufficiently comprehensive across the whole Programme.** Success of the Programme depends crucially on the commitment of all NHS staff, which will come more easily once more of the Programme's benefits are identified and realised. Throughout the Programme, the balance of resources should shift to place increasing emphasis on benefits realisation. For example, Strategic Health Authorities should appoint clinicians and administrative staff who understand all the Programme's elements to work with Local Service Providers and Trusts to establish how the systems can best support a Trust's operations and to maximise benefits after deployment. They should set up mechanisms to share knowledge on how best to realise the benefits.
 - f** **Early experience with the Summary Care Record indicates that patients have a high level of confidence that their personal data will be secure, but security lapses could easily undermine that confidence and reduce the benefits of the Programme.** The Department and the NHS should give priority to data protection, monitor levels of public confidence and review how the levels are being influenced by its communications about the protections in place to secure and manage access to care records.
- 43** Successful implementation of the Programme's systems is dependent on the actions of individual NHS Trusts, and Trusts also rely on their Strategic Health Authority and the Department to provide support and manage aspects of the performance of the Local Service Providers. From our visits to Trusts we identified a range of actions – which some Trusts were undertaking and some of which echo NHS Connecting for Health's own guidance – to help improve the deployment and utilisation of the new care records systems. These actions are set out in the table opposite.

Improving the deployment and utilisation of the new care records systems

Recommendations for NHS Trusts

- Before starting a deployment, Trusts should undertake detailed planning, in partnership with the Strategic Health Authority and the Local Service Provider, drawing on experience of earlier deployments, to establish a realistic timeline and work programme that reflects the circumstances of the individual Trust.
- Every deployment should have full, joint commitment from the clinical and managerial leadership of the Trust. The deployments require change management across the organisation, and senior leaders need to champion the change.
- The resources required at Trust level for a deployment should be planned for, costed and continuously updated as the deployment proceeds.
- Prior to a deployment, Trusts should thoroughly map their work processes and adjust them where necessary to secure in full the potential benefits of the new system. Trusts should also plan the data migration carefully and consider whether it is more practical to reduce the amount of data that needs to be migrated by keeping older information in a separate database to be referred to as necessary.
- Trusts should establish in detail the advantages and disadvantages of the system being deployed compared with the one being replaced, and clearly communicate them to staff in order to manage expectations.
- Trusts should plan for refresher and further training to reinforce consistent working practices and maximise the benefits of the new system.
- Trusts should make clear to staff the importance of reporting all system performance issues through formal channels. They should secure progress reports on change requests from Local Service Providers and keep the staff who requested the changes informed.
- Trusts should rigorously apply the arrangements that have been put in place for handling care records and other patient data, including enforcing disciplinary procedures relating to unauthorised access or failure to keep data secure.

Recommendations for the Department and Strategic Health Authorities

- Strategic Health Authorities should support the transfer of learning from one deployment to the next through staff continuity, both in terms of their own staff and by encouraging Trusts who have been through deployments to share resources with other Trusts during planning and 'go live' periods.
- The Department should require Local Service Providers to provide Trusts with a training environment as close as possible to the system being deployed. For example, the training environment should reflect the different structures of a Trust's outpatient clinics, to reduce the risks associated with staff having to use a system that looks different from the one they trained on.
- The Department should check whether the planned improvements to the service provided by the NHS Connecting for Health Service Desk to NHS staff have been fully and effectively implemented.
- The Department should require Local Service Providers to have transparent processes for logging and dealing with system performance issues and for handling change requests, thereby enabling Trust staff to monitor progress.

PART ONE

Introduction to the Programme

Overview of the Programme

1.1 Launched in 2002, the National Programme for IT is designed to reform the way the National Health Service in England uses information, and hence to improve services and the quality of patient care. For example, the Programme aims to:

- ensure that accurate care records are available at all times to those involved in a patient's care, reducing the risk of medication errors or adverse reactions and helping NHS staff to make fully informed decisions about treatment;
- transmit accurate information, such as bookings and prescriptions, rapidly between different parts of the NHS and to pharmacies; and
- make the NHS more efficient by, for example, reducing the time staff spend repeatedly taking patients' details.

1.2 Part of the Department of Health, NHS Connecting for Health, is leading the national delivery of the Programme. NHS Connecting for Health had a budget of £1.4 billion in 2007-08 for the Programme, and around 1,100 staff and contractors who were employed on the Programme. The Chief Executive of the NHS is the Senior Responsible Owner for the Programme as a whole and since April 2007 responsibility and accountability for delivery has been shared with the local NHS, with the Chief Executives of the 10 Strategic Health Authorities responsible for implementation and benefits realisation in their areas. The organisational structure of the NHS, and its accountability to Parliament, is shown in **Figure 3**.

1.3 The systems and services supplied to the local NHS under the Programme are being delivered by three Local Service Providers, each responsible for a different region of the country (**Figure 4 on page 18**).

1.4 Central to the Programme is the development and implementation of an electronic care record for patients, the NHS Care Records Service, which is intended to comprise for each patient:

- a **Summary Care Record**, containing demographic and key medical information, which will be available across England to NHS staff involved in treating the patient. Patients will also have access to their Summary Care Record online if they register with a service called HealthSpace. Patients will, however, be able to choose not to have a Summary Care Record created or place limits on how it is used; and
- a **Detailed Care Record**, containing full details of the patient's medical history and treatment. The Detailed Care Record will be accessible to a patient's GP and in community and hospital care settings, for example in the event that the patient is referred for hospital treatment. All patients treated by the NHS will have a Detailed Care Record, reflecting the fact that doctors are legally obliged to maintain records of the treatment they provide.

1.5 As well as the Care Records Service, the Programme comprises a range of other major systems and services. N3 is the national network, providing IT infrastructure, networking services, connectivity and broadband capacity to meet the current and future needs of the NHS. An electronic booking service (which became Choose and Book) and electronic prescription service were also part of the original scope of the Programme, together with the Spine which stores patient data, interfaces with other systems and provides security. Other elements, such as the Picture Archiving and Communications Systems for digital X-rays and other images and an NHS e-mail system, NHSmail, have been added during the course of the Programme.

Context of the Programme

1.6 The context within which the Programme is being delivered is enormously complex and constantly changing. Particularly important features are as follows.

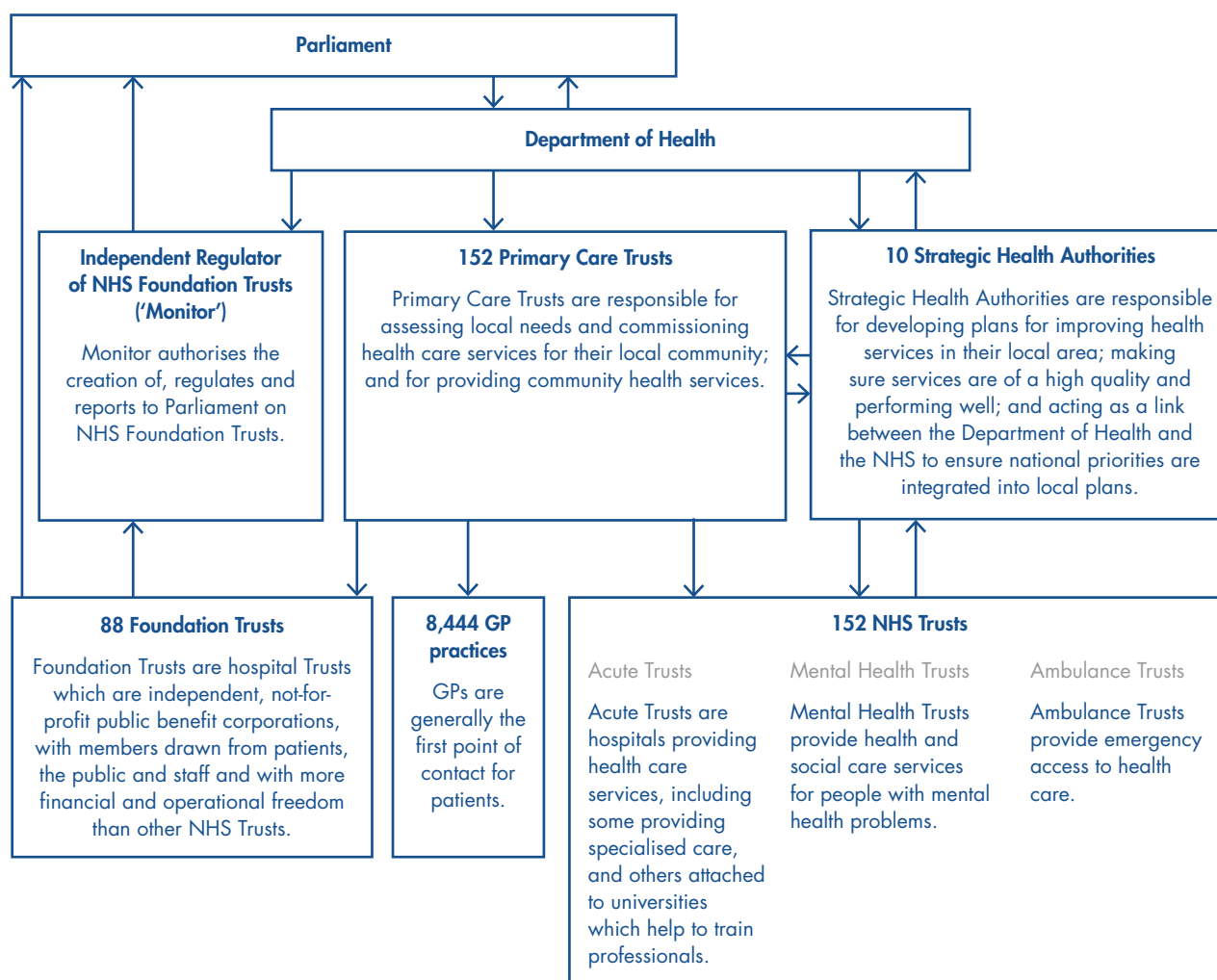
The Programme involves major organisational and cultural change

1.7 The Programme is not just an information technology programme. To be successful, deployment of the systems in NHS Trusts and elsewhere involves substantial organisational and cultural change. Moreover, the Programme is part of a wider change programme that is intended to change the way that those working in the NHS use information in dealing with each other and with patients. It is designed, for example, to support shared care of patients by enabling access to real-time information by each professional involved in a person's care.

The Programme supports the wider development of health informatics to improve health outcomes

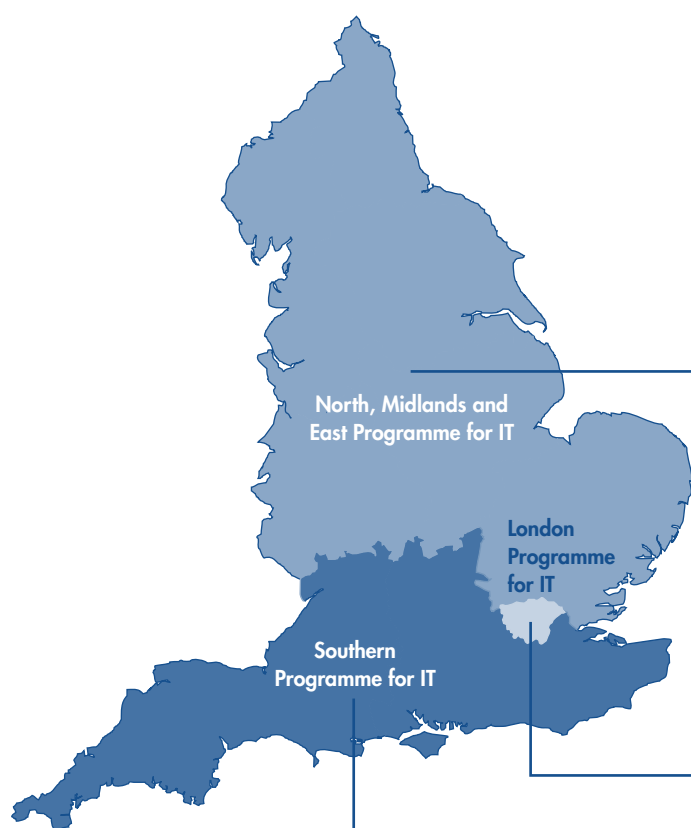
1.8 Timely information on the outcomes of treatments of large populations of patients can improve health and save lives by giving early warning of hitherto unknown risks. Similarly, such information can justify earlier confidence around treatments that are particularly effective, and so make them available to more people more quickly, again with the potential to improve health and save lives.

3 Organisational structure and accountability of the NHS



Source: National Audit Office

4 Areas covered by the Local Service Providers



South

Local Service Provider: Fujitsu

Systems:

Acute Trusts	Cerner Millennium
Mental Health Trusts	Cerner Millennium
Primary Care Trusts	Cerner Millennium
GP practices	None at present

Number of Trusts and GP practices at 31 March 2008:

Strategic Health Authorities	3
Acute Trusts	41
Mental Health Trusts	14
Primary Care Trusts	31
GP practices	1,917

Approximate population served: 13.0 million

North Midlands and East

Local Service Provider: Computer Sciences Corporation (CSC)

Systems:

Acute Trusts	iSOFT Lorenzo
Mental Health Trusts	iSOFT Lorenzo
Primary Care Trusts	iSOFT Lorenzo
GP practices	iSOFT Lorenzo TPP SystmOne

Number of Trusts and GP practices at 31 March 2008:

Strategic Health Authorities	6
Acute Trusts	97
Mental Health Trusts	35
Primary Care Trusts	90
GP practices	4,941

Approximate population served: 29.9 million

London

Local Service Provider: BT

Systems:

Acute Trusts	Cerner Millennium
Mental Health Trusts	Servelec RiO
Primary Care Trusts	Servelec RiO
GP practices	Inpractice Vision 4 Synergy

Number of Trusts and GP practices at 31 March 2008:

Strategic Health Authorities	1
Acute Trusts	31
Mental Health Trusts	10
Primary Care Trusts	31
GP practices	1,586

Approximate population served: 7.2 million

Source: NHS Connecting for Health

1.9 The area of expertise and research that is dedicated to improving health outcomes through better use of information is known as health informatics. Health informatics tools include not only IT but also clinical guidelines, formal medical terminologies and coding, and information and communication systems. The Programme is not a prerequisite for further developments in health informatics, but should support them by making available more timely, accurate and comprehensive data on care outcomes. It includes a 'Secondary Uses Service' as part of the Spine, which provides anonymised data for research and analysis of health needs.

NHS policy and operational changes add new requirements

1.10 Just as the Programme touches on practically every aspect of the NHS, from time to time the NHS has major effects on the Programme. Policy and operational changes in particular can add requirements that are difficult and potentially costly to meet, as the following examples show.

- The 2004 NHS Improvement Plan set out the aim that by 2008 no one will wait longer than 18 weeks from GP referral to hospital treatment. Many systems, including those provided under the Programme, required adjustment (a 'solution') to track performance against the 18-week limit. NHS Connecting for Health estimates that 111 care records systems had received a solution at 31 March 2008, leaving 60 to provide the required data through workaround solutions.
- Compliance with the Mental Health Act 2007 requires good knowledge of the complex requirements. Ideally mental health systems provided under the Programme should support mental health administrators, for example by recording details of Sections in line with the Act, and allowing input and reporting on appeals, renewals, regrades and tribunals, including dates, times, attendees and meeting outcomes.
- The Department makes periodic changes to the organisational structure of the NHS, for example in July 2006 the number of Strategic Health Authorities was reduced from 28 to 10 and of Primary Care Trusts from 303 to 152. Such reconfigurations lead to changes in information requirements and the Programme needs to have the facility to reconfigure information so that it reflects new organisational boundaries.

The Programme depends on deploying systems in a highly devolved NHS

1.11 In most programmes to introduce IT systems across a sector or within a single large organisation, the governance structures allow the key aspects of the programme to be applied compulsorily. This is not the case for the National Programme for IT because the NHS is highly devolved. The main organisations, the Trusts, which are taking the new systems, are self-managed with their own governance arrangements. Their Boards and Chief Executives make the final decisions about deploying the new systems in their Trust.

1.12 Furthermore, 88 Trusts are now Foundation Trusts, which are autonomous though still part of the NHS⁴. They are independent, not-for-profit public benefit corporations, established with the aim of devolving decision-making from central government control to local organisations and communities, and the Secretary of State for Health has no powers of direction over them. The Trusts have members drawn from patients, the public and staff and are governed by a Board comprising people elected from and by the membership. The Government is committed to offering all Trusts the opportunity to apply for Foundation Trust status.

1.13 Also ongoing at the time of our work was a fundamental review of the future of the NHS, led by a leading surgeon, Professor the Lord Darzi of Denham KBE. The review is examining four challenges, one of which is to establish a vision for the next 10 years based less on central direction and more on patient control, choice and local accountability, and services that are responsive to patients and local communities. The review issued an interim report in October 2007 and will conclude in June 2008.

4 The 88 Foundation Trusts are included within the Trust figures shown elsewhere in this report.

1.14 Implementing a Programme that is centrally specified in such a devolved environment, and where the trend is for increasing devolution to local level, generates inevitable tensions that have implications for the following areas.

- **Contracting** – the Programme’s contracts were based on all NHS Trusts taking the systems at some point. Foundation Trusts cannot now be forced to take the systems and, should any elect not to do so, there will be financial implications for both the Trusts concerned and the Programme (paragraph 2.32). The NHS Chief Executive has, however, directed the Strategic Health Authorities to ensure that other NHS organisations in their areas meet the expectations of the contracts.
- **Deployment plans** – the timing of system deployments must be agreed with Trust Boards and their Chief Executives, and in particular the decision that a Trust is ready to ‘go live’ lies solely with the Trust. This decision is especially sensitive because of the risks to patient care and the general operation of a Trust if a decision to go live were to be made prematurely.
- **Benefits realisation** – extracting the benefits from the new systems cannot be a centralised process; indeed the richness of the benefits realisation should come, with time, from the diverse NHS using the common systems to derive wide-ranging benefits that can be replicated. The enthusiasm and effort needed to derive the Programme’s benefits will have to be driven locally and cannot be mandated from the centre.
- **Plurality of provision** – government policy is to use the most appropriate or cost-effective health care provider, whether a part of the NHS or an independent organisation such as a Treatment Centre. Bringing these organisations into the Programme will add further complexity; for example, some may have business reasons for using different core systems from those offered under the Programme.

PART TWO

Progress in delivering the Programme

2.1 This part of the report examines the progress that has been made in delivering the Programme: the position against time and cost, progress in realising benefits, and the technical performance of the systems that have been deployed.

Progress against time

Relevant Committee of Public Accounts conclusions, Twentieth Report of Session 2006-07

Conclusion 1: The delivery of the patient clinical record, which is central to obtaining the benefits of the programme, is already two years behind schedule and no firm implementation dates exist. By now almost all acute hospital Trusts should have new NPfIT patient administration systems as the essential first step in the introduction of the local Care Record Service. As of June 2006 the actual number was 13 hospitals. In June 2006 the Department wrote to us stating that by October 2006 there would be a further 22. So far as we are aware, up to the end of February 2007 the number has increased by only five acute hospitals. The introduction of clinical as opposed to administrative software has scarcely begun; indeed, essential clinical software development has not been completed. The Department should develop with its suppliers a robust timetable which they are capable of delivering, and communicate it to local NHS organisations who may then have greater confidence as to when systems will be delivered.

Conclusion 9: At the present rate of progress it is unlikely that significant clinical benefits will be delivered by the end of the contract period. As a matter of urgency the Department must define precisely which elements of functionality originally contracted for from the Local Service Providers will be available for implementation by the end of the contract period and in how many NHS organisations it will be possible to have this functionality fully operational. The Department should then give priority

to the development and deployment of those systems of the greatest business benefit to the NHS, such as local administration and clinical systems.

2.2 At the outset of the Programme in 2002, the aim was for implementation of the systems to be complete by 2010 (though the timetable from 2006 was described as tentative in the document setting out the IT strategy for the NHS⁵), and in 2003, the Secretary of State for Health announced that by 2010 every patient in England would have an electronic care record. According to the tentative timetable, by the end of 2007, all the Programme's basic systems would be deployed across the NHS, with increased functionality and integration to come. The following paragraphs set out what progress has been made in developing and deploying the systems, focusing on the Care Records Service in particular.

Progress on the Summary Care Record

2.3 The Summary Care Record will contain key medical information for every patient in England and thereby support NHS staff in treating the patient when no other information is available to them. After a delay of just over two years, deployment of the Summary Care Record began in March 2007. GP practices in five Primary Care Trusts are part of an 'early adopter' programme and at 31 March 2008:

- ten GP practices in Bolton, the first area to deploy the record, had achieved 'business go live' and some 60,000 records (25 per cent of the patient population) had been uploaded to the system;
- sixteen GP practices in Bury had achieved 'business go live' and some 94,000 records (79 per cent of the patient population) had been uploaded to the system; and
- the remaining three Primary Care Trusts (Bradford and Airedale, Dorset, and South Birmingham) had public information campaigns underway but had not yet begun to upload care records.

5 *Delivering 21st Century IT Support for the NHS*, Department of Health, June 2002.

2.4 During our visit to Bolton, we found that deployment of the Summary Care Record had generally gone smoothly, although progress was slower than expected. The roll-out had meant substantial extra work for the Primary Care Trust and, although NHS Connecting for Health had provided considerable support including a dedicated project manager, the Trust's resources were stretched. In particular, engaging with GPs and other local stakeholders was time-consuming and GPs themselves had spent time discussing the implications of the Summary Care Record with patients. This was expected to continue as more information was added to the Summary Care Record and the Primary Care Trust was considering compensating GPs for the work.

2.5 NHS Connecting for Health commissioned University College London to carry out a year-long evaluation of the early adopter programme. The evaluation report was published on 6 May 2008, as we were finalising this report. NHS Connecting for Health is considering the findings, which will inform the implementation of the Summary Care Record in the remaining 147 Primary Care Trusts. The NHS has been asked to start planning for the implementation but firm timescales will not be set until lessons from the evaluation have been identified. A key prerequisite for the national roll-out will be for GPs' care records systems to be compatible with the Summary Care Record. At December 2007, two of the main GP system suppliers, covering around a quarter of GPs, had delivered the enhancements needed to make their systems compatible.

Progress on Detailed Care Records

2.6 The three Local Service Providers are responsible for implementing electronic care records systems, which will support the creation of Detailed Care Records containing full information on a patient's medical history and treatment. The Detailed Care Record will be the single record that is accessible to the patient's GP and in community and hospital care settings, and so should remove the need for different parts of the NHS to keep separate records on the same patient.

Development of care records systems

2.7 The Local Service Providers are to make the care records systems available to the NHS in a series of releases, initially providing only some of the functions required. Since we last reported, progress in London was delayed while BT replaced its software supplier, GE Healthcare (who had acquired the original sub-contractor, IDX, in January 2006) with Cerner. Prior to the change in May 2007, the IDX system had been deployed in one

Acute Trust, which has since implemented the Cerner system. As we reported previously, in 2005 Fujitsu in the South also replaced its software supplier, IDX, with Cerner.

2.8 Cerner's Millennium product is to be deployed in Acute Trusts in London and the South. Millennium was already an established product in the United States and elsewhere so development work has focused on adapting it for the NHS in England. Deployment of the first release began in December 2005 in the South and in July 2007 in London, and three further releases of the software will follow. The first release provided some of the functions required, with most of the clinical functionality planned for later releases.

2.9 In the South, Fujitsu is also deploying Millennium to Mental Health Trusts and Primary Care Trusts, while in London BT is following a 'best of breed' approach by deploying a different product, CSE Servelec RiO, to Mental Health Trusts and Primary Care Trusts. In terms of mental health, the RiO system is being tailored to support staff to manage their caseloads more easily and share information with each other, improving the quality of care they can provide. The system supports risk assessments, client correspondence and progress notes, and meets the information requirements of the Mental Health Act 2007 (paragraph 1.10).

2.10 In the North, Midlands and East, CSC is to deploy iSOFT's Lorenzo software. The development of Lorenzo has taken much longer than originally planned, with the delays attributed in part to an underestimation by all parties of the scale and complexity involved in building a new system from scratch. The software developer, iSOFT, has experienced financial, accounting and governance difficulties that have required significant attention, and is currently the subject of an investigation by the Financial Services Authority into possible accounting irregularities. Following a merger completed on 30 October 2007, iSOFT is now part of the IBA Health Group.

2.11 In the light of concerns about progress in developing Lorenzo, in summer 2007 NHS Connecting for Health and CSC jointly commissioned two reviews of the delivery arrangements. The first review, by experts in IT development, identified, among other things, a lack of clarity around responsibilities and shortcomings in programme management and end-to-end delivery arrangements within CSC and iSOFT. It concluded that further delays could be expected. The second review, by a large-scale systems integrator, reached similar conclusions, in particular noting that the then current plan for development and deployment was behind schedule and in any event not feasible, and recommended that the phased strategy that NHS Connecting for Health had suggested should be adopted.

2.12 NHS Connecting for Health has monitored closely the actions being taken by CSC and iSOFT in response to the recommendations made by the reviews, including through visits to iSOFT's development sites in India. The actions include the introduction of integrated programme planning to aid decision-making; improvements in end-to-end delivery arrangements covering iSOFT, CSC, NHS Connecting for Health and the local NHS; the clarification of responsibilities; the recruitment of new staff to fill vacancies at CSC and iSOFT; and earlier NHS involvement in software validation and testing. Work to improve the arrangements for Lorenzo was continuing in a number of areas at the time of our work, for example in relation to risk management and release management processes. In addition, the planned two releases of Lorenzo have been broken down into four smaller releases.

2.13 Nevertheless there remains considerable uncertainty over the delivery schedule for Lorenzo. In March 2008, NHS Connecting for Health and CSC agreed a memorandum of understanding, with a view to achieving greater certainty over the delivery timescales for Lorenzo. The first release, which has been demonstrated to NHS staff and has received a positive reception, is now expected to be available for deployment at three early adopter Trusts in summer 2008, with full roll-out planned from autumn 2008.

Deployment of care records systems

2.14 The care records systems are being deployed in NHS Trusts, but at a slower pace than originally planned. Figure 1 on page 8 sets out the number of deployments that had taken place in each area at 31 March 2008. A total of 128 deployments had taken place, including 34 in Acute Trusts. While the most deployments have been made by CSC in the North, Midlands and East, these are of the iPM system, an existing system upgraded to meet the requirements of the Programme, which offers limited clinical functionality. iPM is an interim solution and the Trusts concerned will need to go through a second deployment once Lorenzo is available.

2.15 The timetables the Local Service Providers originally agreed with NHS Connecting for Health proved to be unachievable given the scale of the challenge involved in developing and deploying the care records systems in the NHS. Since April 2007, responsibility for the development of implementation plans has rested with the local NHS, working with the Local Service Providers. The Strategic Health Authorities and Local Service Providers in each

of the three local areas have been developing revised plans for future deployments, comprising a broad outline plan over a number of years and a detailed rolling annual programme scheduling individual deployments.

2.16 Revised outline plans are now in place for London and the North, Midlands and East, with deployment of the final releases of the care records software scheduled to span several years. The plan for London indicates the final releases of Millennium and RiO will be deployed from 2009-10 to 2011-12; and in the North, Midlands and East the final release of Lorenzo is scheduled to be deployed from 2011-12 to 2014-15, although the timetable remains uncertain until Lorenzo is available and has been deployed in the first Trusts. At the time of our work, the plans for future deployments in the South were being discussed as part of the process to reset the contract with Fujitsu (paragraph 3.50). Taking the country as a whole, it is likely to take until 2014-15, some four years longer than was tentatively planned, before all Trusts have fully deployed the care records systems, though some should receive the final releases of the software in late 2009.

2.17 As well as the availability of the products to deploy, the rate of future deployments will depend on the capacity of the Local Service Providers, the capacity and readiness of NHS Trusts, and the state of Trusts' existing systems compared with what is available under the Programme. Many of the care records systems deployed to date offer limited clinical functionality, though they do bring administrative and other benefits and increased clinical functionality is planned for later releases. In some cases, Trusts have decided to wait for the later releases and not take the limited clinical functionality available in the first release.

2.18 NHS Connecting for Health has committed that Trusts will not be expected to take the Programme's systems until they are at least as good as the systems they currently have. In practice, however, if existing systems are old and/or no longer being supported by the supplier concerned, Trusts may have little choice but to take the systems offered under the Programme and this can result in a loss of functionality, at least in the short term. Two Trusts we visited in the South described how the first release of Millennium had less functionality than their previous systems and how this had made it particularly difficult to engage with clinical staff. To bring forward clinical functionality to the NHS in the North, Midlands and East, CSC has agreed with NHS Connecting for Health and the Strategic Health Authorities that the first release of Lorenzo (paragraph 2.13) will be solely clinical.

Other elements of the Programme

2.19 A summary of the progress made on the remainder of the Programme's projects is set out in **Figure 5**, with full details provided in Volume 2 of this report.

Progress against cost

Relevant Committee of Public Accounts conclusion, Twentieth Report of Session 2006-07

Conclusion 2: The Department has not sought to maintain a detailed record of overall expenditure on the Programme and estimates of its total cost have ranged from £6.2 billion up to £20 billion. Total expenditure on the Programme so far is over £2 billion. The Department should publish an annual statement outlining the costs and benefits of the Programme. The statement should include at both a national and local level original and current estimates of total costs and benefits, costs and benefits to date, including both cash savings and service improvements, and any advances made to suppliers.

2.20 The full gross cost of the Programme comprises:

- the costs of the eight core contracts agreed between the Department and suppliers, including approved additions;
- the costs of products added to the scope of the Programme, such as NHSmail and GP Systems of Choice (paragraph 3.40);
- other central expenditure, including the costs of NHS Connecting for Health in managing the Programme; and
- local implementation costs incurred by the NHS.

Estimated cost

2.21 The first three categories of spending shown above are managed centrally and recorded by NHS Connecting for Health. The fourth category, local implementation costs, is a matter for the individual NHS bodies concerned. There is therefore no aggregate budget for the Programme, managed by a single agency. NHS Connecting for Health does produce projections of expenditure, based on its own estimates of central costs and information on local expenditure provided by the NHS (paragraphs 2.24 and 2.25). At 31 March 2008 NHS Connecting for Health was estimating that gross expenditure on the Programme would total £12.7 billion (**Figure 6**). The cost estimates are un-indexed and made at 2004-05 prices; the cash outturn will be higher due to the impact of price inflation in years subsequent to 2004-05⁶.

5 Progress made on other elements of the Programme

Project	Progress made
N3 network	The target to connect 18,000 NHS sites to the N3 network by 31 March 2007 was achieved two months early, in January 2007. At 31 March 2008, there were nearly 23,000 live, serviced connections.
Spine (comprising eight applications)	To date, the key software releases have been delivered on or ahead of target and the system is expected to be fully complete in 2008.
Choose and Book	At 31 March 2008, 95 per cent of GPs and 100 per cent of Acute Trusts were live on the system (although 16 per cent of Trusts were not able to take direct bookings).
Electronic Prescription Service	At 31 March 2008, the first of two phases was underway, with 79 per cent of GPs and 80 per cent of pharmacies able to use the first release of the software. The second release of the software is due to be piloted in summer 2008.
Picture Archiving and Communications Systems	Full deployment of the system to 127 Acute Trusts was achieved in December 2007, three months ahead of target.
HealthSpace	The website was launched in December 2003; and from June 2007, patients in the early adopter areas were able to use the website to view their Summary Care Record.
NHSmail	The service was available on target in October 2004. At 31 March 2008, some 341,000 NHS staff had NHSmail addresses.
Quality Management and Analysis System	Full deployment was achieved on target in January 2005, with the first payments using the system made in April 2005.
GP to GP transfer	The target for 3,500 GP practices to be live on the system was achieved in February 2008, one month early.

Source: NHS Connecting for Health

⁶ The core contracts were placed in 2003 and 2004, with the charges subject to indexation to reflect the effects of inflation after 1 April 2005. The contracts provide for indexation based on the Retail Prices Index.

6 Estimated cost of the Programme at 31 March 2008 (at 2004-05 prices)

Category	Current contract end date	£ million	£ million	£ million
Central costs				
Core contracts				
■ London	October 2015	1,021.0		
■ South	December 2014	1,104.0		
■ North East	December 2015	1,035.0		
■ East	December 2015	930.0		
■ North West and West Midlands	December 2015	1,042.0		
■ Spine	June 2013	889.0		
■ N3 network	March 2011	530.0		
■ Choose and Book	December 2009	144.5		
■ Amount retained by Accenture (paragraph 3.47)		110.0		
Total for core contracts			6,805.5	
Products added to the scope of the Programme			665.8	
Other central costs			1,599.0	
Total for central costs				9,070.3
Local costs				3,585.9
Total				12,656.2

Source: NHS Connecting for Health

2.22 In our first report on the Programme, we reported that provision had been made for total spending on the Programme of £12.4 billion (at 2004-05 prices), based on our analysis of broad projections of expenditure made at an early stage of the Programme. We noted that while some items of expenditure were definite, others were subject to considerable uncertainty. The current estimate is based on better, more certain information. A reconciliation between the two figures is shown in **Figure 7 overleaf**.

2.23 Key changes since the start of the Programme include the following.

- The value of the core contracts has increased by a total of £678 million (11 per cent) (**Figure 8 on page 27**), mainly due to the purchase of increased functionality, though there have been no increases in the cost of individual elements purchased under the original contracts. The remaining increases on the core contracts have resulted from supplier and sub-contractor changes.
- There has been a series of additions to the scope of the Programme (Figure 7), amounting to £666 million, including £106 million on the GP Systems of Choice scheme (paragraph 3.40) and £117 million on the NHSmail system.
- There have been reductions in some cost estimates as costs have become more certain, for example the contracts for the Picture Archiving and Communications Systems (now part of the local costs) was secured at a lower price than expected and the estimate has therefore reduced by £135 million.

2.24 The estimated cost of the Programme includes the costs managed by local NHS bodies and incurred in implementing the systems (principally the new care records systems and the Picture Archiving and Communications Systems), for example in training staff and upgrading computer hardware. There remains some uncertainty around the estimates of local costs, however, principally because they comprise forecasts taken from Trusts' business cases for Programme-related expenditure that were compiled in 2003-04.

2.25 The Department collects information on local expenditure via an annual survey of the NHS, though the survey does not distinguish between expenditure on the Programme and other investment in IT. In response to the recommendation by the Committee of Public Accounts that the Department should publish details of the cost of the Programme at both national and local level, the Department said it would refine from 2007-08 the annual survey of the NHS to differentiate between expenditure on the Programme and other IT spending.

7 Reconciliation between the cost estimate included in our first report and the current estimate

Category	Provision shown in our previous report £ million	Current estimate £ million	Difference £ million	Comment
Core contracts	6,220	6,806	586	The value of the contracts at the start of the Programme was £6,128 million. The change of £586 million since we last reported is included within the full increase of £678 million in the value of the core contracts since the start of the Programme, shown as the total in Figure 8.
Extrapolations	337	0	(337)	In our previous report, we included an estimate for the cost of replacing the two contracts which ended before 2012 (for the N3 network and Choose and Book). We have not used these extrapolations in this report, given the degree of uncertainty around future contracts.
Products added to the scope of the Programme	621	666	45	The amount shown in our previous report included £245 million for the costs of the data stores for the Picture Archiving and Communications Systems that had been added to the Programme. These costs are now reported within local costs, as they are bound up within the business cases produced by the NHS for Programme-related expenditure. The net increase in the cost of products added to the Programme is therefore £290 million.
Other central costs	1,900	1,599	(301)	In our previous report, we included £1,900 million for other central costs, although the Department expected the total to be less than £1,500 million. The current estimate is between the two, though closer to the Department's figure.
Local costs	3,375	3,586	211	As noted above, the cost of the data stores for the Picture Archiving and Communications Systems (£245 million) is now reported within local costs. The estimate for other local costs has decreased slightly.
Total	12,453	12,657	204	

Source: National Audit Office analysis of NHS Connecting for Health data

2.26 Disentangling the different categories of local expenditure is, however, not straightforward, and our visits to NHS Trusts highlighted a lack of detailed and precise information on the costs they had incurred in deploying the Programme's systems. The Department has therefore decided not to refine the annual survey as originally proposed, but instead for 2007-08 it will supplement the existing survey with additional research at a sample of local sites. It then plans to work with the NHS to develop an improved approach for future years, which will involve Trusts collecting and reporting data on their expenditure on the Programme.

Expenditure to date

2.27 Expenditure on the Programme totalled £3,550 million in resource terms at 31 March 2008. This includes the central costs incurred by NHS Connecting for Health plus an estimate of local NHS costs.

2.28 NHS Connecting for Health has profiled expected spending on the eight core contracts and this is currently well behind what was originally projected – totalling £1,933 million in the period to 31 March 2008, 44 per cent below the profiled expenditure of £3,428 million – reflecting the slower than planned delivery of the care records systems. The delays in deployments may result in the total contract value being reduced for the Local Service Providers, because they will be unable to recover the service charges that would have been earned had systems been deployed earlier. Where the cause of delay is attributed to the Local Service Provider, inflation is not taken into account in calculating the cash payment due for a deployment.

2.29 Under the terms of the contracts, suppliers are paid only when services are proven to have been delivered and working for 45 days. For the new care records systems, NHS Connecting for Health does not pay Local Service Providers until it receives agreement from the Trust concerned. In some instances, suppliers have not been paid for over 12 months after the deployment of systems.

8 Changes in the value of the core contracts since the start of the Programme

Contract	Change in contract value £ million	Reason for the change
London	55	Agreed as part of the contract reset (paragraph 3.50) to secure a range of benefits including additional functionality, deployment of interim solutions, support for phased roll-outs, and enhanced system availability.
South	169	Including increased costs due to the change in the main sub-contractor from IDX to Cerner, and the transfer of some services from additional products added to the scope of the Programme to core services.
North East	0	–
East	(4)	Adjustment made at the novation of the contract from Accenture to CSC.
North West and West Midlands	(1)	Adjustment made when the contract was restated (paragraph 3.50).
Spine	269	Including increased costs due to additional functionality not envisaged at the time of the original contract, such as the Secondary Uses Service and the Quality Management and Analysis System, and to support developments such as NHS reorganisation (paragraph 1.10).
N3 network	0	–
Choose and Book	80	Use of provision made at the time of the contract to purchase services beyond the scope of the original contract, specifically to deliver additional services to support the Department's new policy requirements such as 'extended choice'.
Amount retained by Accenture for the North East and the East	110	Amount retained by Accenture for the work it completed on the Programme prior to the novation of its contracts to CSC (paragraph 3.47).
Total	678	

Source: NHS Connecting for Health

2.30 Figure 9 overleaf provides an analysis of the length of time between systems being deployed and authorisation for payment. At 31 March 2008, Fujitsu in the South had the highest average and the most deployments for which no payment had yet been made. In respect of the care records systems, however, the deployments in the South and also in London were early releases of the final system, whereas in the North, Midlands and East to date only interim systems have been deployed as Lorenzo is not yet available. Fujitsu told us that, in its view, Trusts on occasion held back from agreeing that payment should be made, even where systems were working, until all the non-contractual changes they were seeking had been implemented.

2.31 The contracts allow the Department also to make advance payments, in recognition of the substantial sums suppliers have to spend on system development and deployment before they start being paid. This arrangement, which is within Treasury guidelines, was intended to keep the cost of the contracts down by eliminating suppliers' higher borrowing costs. The advances are secured by bank letters of credit or bonds, and are recoverable on

demand. In addition, if a supplier does not earn the advance in the period covered by the advance (up to 12 months), the outstanding amount is repaid. In the period to 31 March 2008, advance payments totalling £1,294.8 million had been made, of which £369.3 million were outstanding and had not been signed off as final payments⁷. £143.0 million (39 per cent) of the outstanding advances were amounts paid to Fujitsu in its role as the Local Service Provider in the South.

Possible payments to and from suppliers when systems are not deployed or milestones are not achieved

2.32 The Programme's contracts were based on the assumption that all Trusts would take the new systems at some point, and there is a financial incentive for Trusts to do so in that they will receive the systems themselves free of charge. However, in the event that the Local Service Providers do not receive the expected revenue for reasons solely due to the Department (for example, where a Trust elects not to deploy the system), the Department has to make payments to the suppliers concerned.

⁷ The advance payments covered the core contracts and the contracts for deploying the Picture Archiving and Communications Systems. The amount of £369.3 million outstanding and still with suppliers at 31 March 2008 was in addition to the £1,933 million expenditure to date in paragraph 2.28.

9 Analysis of payments for system deployments

Area	Local Service Provider	Number of deployments at 31 March 2008	Number of deployments where no payment had been made	Average number of days between deployment and authorisation for payment
London	BT	51	8	107
South	Fujitsu	92	56	219
North, Midlands and East	CSC	284	48	115

Source: National Audit Office analysis of NHS Connecting for Health data

NOTES

The figures shown for numbers of deployments include all systems deployed at Trusts and there may be more than one system per location. The figures do not include deployments of GP systems.

The number of deployments shown for CSC also includes some deployments made by Accenture before its contracts were novated to CSC.

- In London and the South, where at the end of a financial year the revenue earned by the Local Service Provider is less than an agreed 'minimum income commitment' and the shortfall is solely due to the Department, the Department has to make a payment to take the Local Service Provider's revenue up to the level of the minimum income commitment.
- In the North, Midlands and East, the Department has committed to a specified volume of deployments in each year. If these deployments do not take place and the shortfall is solely due to the Department, the Department has to pay the Local Service Provider 45 per cent of the deployment charge and 61 per cent of the ongoing service charge that would have been paid had the deployment taken place. If the deployment is subsequently made, the Department will pay the balance of the deployment charge and from that time the full service charge; if the deployment is never made, the service charge part-payment will continue to the end of the contract.

2.33 At 31 March 2008, payments totalling £36.1 million had been made under these arrangements. Of this, £30.3 million related to care records systems in London and the North, Midlands and East (of which £29.1 million will be deducted from the charges if the deployments subsequently go ahead, with the remaining £1.2 million irrecoverable) and £5.8 million related to the Picture Archiving and Communications Systems in the North, Midlands and East (all irrecoverable). No payments had been made in relation to the South.

2.34 If suppliers themselves miss key milestone dates, they incur 'delay deductions'. The deductions are paid into an escrow account on which interest is earned. Suppliers can earn the deductions back if they deliver within the period of an agreed remediation plan; otherwise the Department is entitled to keep the money. From the start of the Programme to 31 March 2008, delay deductions of £26.3 million were incurred (**Figure 10**).

10 Delay deductions to 31 March 2008

Total deductions incurred £ million	Earned back by supplier £ million	Still available to be earned back £ million	Retained by the Department £ million
26.3	10.1	6.7	9.5

Source: NHS Connecting for Health

Progress in realising benefits

Relevant Committee of Public Accounts conclusions, Twentieth Report of Session 2006-07

Conclusion 2: The Department has not sought to maintain a detailed record of overall expenditure on the Programme and estimates of its total cost have ranged from £6.2 billion up to £20 billion. Total expenditure on the Programme so far is over £2 billion. The Department should publish an annual statement outlining the costs and benefits of the Programme. The statement should include at both a national and local level original and current estimates of total costs and benefits, costs and benefits to date, including both cash savings and service improvements, and any advances made to suppliers.

Conclusion 3: The Department's investment appraisal of the Programme did not seek to demonstrate that its financial benefits outweighed its cost. The main justification for the Programme is to improve patient services, and the Department put a financial value on benefits where it could. The Department should also quantify non-financial benefits, even if they are not valued, to better inform decision making and to provide a baseline for work after implementation to ensure that the intended benefits are being fully realised. The Department should commission and publish an independent assessment of the business case for the Programme in the light of the progress and experience to date.

2.35 The Department expects the Programme to generate substantial benefits for patients and the NHS. At the outset it sought to put a financial value on the expected benefits though, as the main aim was to improve services rather than reduce costs, it was not possible to do so in all cases, and there is therefore no baseline against which to assess the benefits that are in due course achieved.

2.36 In response to the recommendation by the Committee of Public Accounts, the Department is to produce an annual statement of the costs and benefits of the Programme, including details of financial and non-financial benefits. The first statement, for 2006-07, was published in March 2008, later than the Department's commitment to the Committee of Public Accounts to publish by the end of 2007. The statement drew on information from the 20 per cent of NHS organisations where the Programme's systems were in daily use and the deployments were sufficiently mature to start to draw conclusions.

2.37 The benefits statement reported that evidence of benefits was being categorised as: cash releasing savings; other measurable benefits to which a financial value could be attributed; and non-measurable benefits which provided local value. In terms of financial savings, the statement reported:

- estimated savings to 31 March 2007 of some £208 million (Figure 11), over 90 per cent of which related to the N3 network; and
- estimated annualised recurrent savings of £119 million (Figure 11), which would result in total savings of £1.1 billion over the 10 years to 2013-14.

Work was also underway to put a value on the efficiency improvements that had been generated by the Programme, such as time savings for NHS staff and patients.

2.38 The Department expects that the total recurrent savings will prove to be considerably higher than the current estimate of £1.1 billion as more of the Programme's systems are fully deployed across the NHS. It is developing its approach to measuring the benefits and the first statement was being put together at the same time as we carried out our work for this report. The statement has not yet been subject to audit.

2.39 Our visits to NHS Trusts confirmed that the Picture Archiving and Communications Systems had yielded the most tangible benefits to date, for example in helping to reduce diagnostic waiting times. The benefits from other parts of the Programme, such as the care records systems and Electronic Prescription Service, were yet to be realised, though Trusts clearly saw the potential for benefits in due course. Trusts also highlighted that the Programme had brought wider benefits, for example in enhancing the IT skills of their staff, some of whom previously had low levels of IT literacy and little experience of using computers.

2.40 Some Trusts we visited had identified savings arising from the deployment of the new systems, but there was also evidence of operational performance declining immediately following a deployment. Some staff had not found the new care records systems intuitive to use and key processes such as booking a new patient into an outpatient clinic were taking much longer than they had previously. This had prompted some Trusts to take on additional staff to input or process data. However, Trusts considered that any negative impact would diminish as staff became more familiar with the systems and more records were entered, removing the need for staff to re-enter demographic and other basic details.

11 Estimated financial savings arising from the Programme

System	Description of saving	Reported savings to 31 March 2007 £ million	Annualised recurrent savings £ million
N3 network	Including savings from decommissioning the previous NHS network	192.1	94.8
Spine (Secondary Uses Service)	Savings from decommissioning the previous NHS-wide clearing service	1.3	5.1
Picture Archiving and Communications Systems	Mainly film, chemical processing and maintenance cost savings	14.2	17.3
Other	Including savings in software licence costs for GP systems	0.8	1.9
Total		208.4	119.1

Source: National Programme for IT benefits statement for 2006-07

2.41 There is a large amount of work now to be done on benefits realisation, in particular to drive benefits from the new care records systems at local level where the Strategic Health Authorities and Trusts have so far focused largely on the practicalities of getting the systems deployed.

Technical performance of the systems

2.42 The contracts with suppliers specify minimum levels of performance and NHS Connecting for Health monitors against targets in three areas:

- **levels of service availability**, with the target varying from system to system and in some cases over time. The most common target is 99.9 per cent which equates to a system being available for all but 45 minutes in a 31 day month (excluding 'planned downtime' – paragraph 2.46);
- **response times**, i.e. the elapsed time for the system to process a message, with the target varying depending on the type of transaction. For example, 95 per cent of transactions to identify and search for a patient on the Personal Demographics Service (part of the Spine) should be completed within 1.05 seconds; and
- **the length of time taken to fix problems**, i.e. the elapsed time between an incident becoming known (such as a person reporting a fault) and the incident being resolved, with the target varying according to the severity of the incident. A typical target for the most serious incidents ('severity one') would be for the incident to be resolved within two hours.

2.43 Large volumes of performance data are generated automatically by the various systems and in some cases their component parts. Suppliers have a right to challenge the data, for example where they consider performance failures were beyond their control and attributable to another supplier or to the NHS.

2.44 One of the challenges of assessing the performance of the Programme's systems is the complexity of pinpointing where the cause of a particular problem lies. For example, for a GP to make a Choose and Book appointment for a patient depends on the Choose and Book software itself, the N3 network, several components of the Spine, and the many components of local GP and hospital systems all working effectively. A failure in any one of the applications can result in the Choose and Book transaction not being completed. The interdependence of the systems and the lack of visibility at local level of the process from one end to the other can also mean that the data may not bear out the perceptions of NHS staff about the performance of particular systems.

2.45 Details of the service availability of the Programme's key systems for the 18 months to March 2008 are set out in the Annex to Volume 2 of this report. Suppliers achieved their targets in most months.

2.46 The performance data on service availability does not reflect 'planned downtime' which suppliers use to maintain or upgrade their systems. NHS Connecting for Health told us that planned downtime for maintenance is typically between two and four hours each quarter for each system, though very occasionally a longer period of downtime is required to upgrade a system. For example, in November 2007 the Spine was down, as planned, for 48 hours while BT implemented improvements.

Service failures

2.47 Service failures are classified into five severity levels. Examples of severity 1 incidents, the most serious, include: a hospital system (such as a care records system or a Picture Archiving and Communications System) being completely unavailable at one or more hospitals; a loss of power at a Local Service Provider data centre, causing the failure of multiple services; and a high risk clinical safety or information governance issue, such as a patient record being displayed with the demographic details of another patient. Severity 2 incidents are less serious or extensive service failures, such as a number of users at a hospital are unable to access a hospital system, or a partial loss of functionality at a hospital which has a significant impact on hospital processes and for which there is no known workaround.

2.48 In the six months from July to December 2007, there was a total of 807 severity 1 and severity 2 incidents, which were attributed to the Programme's suppliers (**Figure 12**). In assessing the significance of these figures, it is important to keep in mind the scale of the Programme and its component systems. For example, the N3 network has some 23,000 serviced connections. Of the severity 1 and 2 incidents, 71 (nine per cent) were not fixed within the designated time (two hours for severity 1 incidents and four hours for severity 2 incidents). All service failures that affect service availability are taken into account in calculating performance against target.

2.49 If a supplier's performance falls below the specified performance level in any month, the supplier incurs 'performance deductions', with the amount dependent on the severity of the performance failure and its repetition. If the supplier rectifies the failure for the subsequent three months, the deductions are refunded; otherwise, the Department is entitled to keep the money. From the start of the Programme to 31 March 2008, performance deductions totalling £14.2 million were incurred, representing three per cent of total service charges (**Figure 13**).

2.50 The largest performance failure to date concerned CSC's contract as the Local Service Provider for the North West and West Midlands. A 45 minute power outage at CSC's data centre in Maidstone on 30 July 2006 was followed by problems restarting systems. Data held in the data centre could not be accessed and services could not immediately be provided by the back-up systems that had been put in place. No data was lost but 80 NHS Trusts⁸ were affected and had to operate paper systems as a contingency. Services were restored on 2 August 2006, with resolution of all the issues completed on 8 August 2006. CSC incurred a performance penalty of £8.5 million for this incident, of which £1.2 million was deducted at the time, with the remainder⁹ to be used to buy additional services free-of-charge or deducted at the end of the contract.

2.51 NHS Connecting for Health subsequently reviewed the causes of the performance failure at Maidstone. As a result, among other things, CSC was required to increase the resilience of its power supplies and improve its disaster recovery arrangements and communication processes. NHS Connecting for Health also reviewed the data centres of the other Local Service Providers to gain assurance that they could not suffer from the same problems as occurred at Maidstone.

12 Severity 1 and 2 incidents attributed to the Programme's suppliers, July to December 2007

System or service	Number	Severity 1 incidents		Severity 2 incidents		
		Number	Percentage	Number	Number	Percentage
		Not fixed within the designated fix times		Not fixed within the designated fix times		
N3 network	19	0	0.0	18	0	0.0
Spine	26	5	19.2	11	6	54.6
Choose and Book	2	2	100.0	7	0	0.0
NHSmail	1	0	0.0	7	4	57.1
Systems provided by Local Service Providers	60	9	15.0	398	15	3.8
Picture Archiving and Communication Systems	69	11	15.9	189	19	10.1
Total/per cent overall	177	27	15.3	630	44	7.0

Source: NHS Connecting for Health

NOTE

The figures are taken from operational data and may be adjusted before the final position is agreed between NHS Connecting for Health and the supplier concerned. For example, the operational data may show two incidents logged against a supplier on the same day, which may ultimately be reported as a single incident by virtue of having the same underlying cause and occurring within the same timeframe.

13 Performance deductions to 31 March 2008

Total service charges £ million	Total service deductions incurred £ million	Earned back by supplier £ million	Still available to be earned back £ million	Retained by the Department £ million
432.9	14.2	1.8	6.7	5.7

Source: NHS Connecting for Health

⁸ 72 Primary Care Trusts and 8 Acute Trusts.

⁹ Figure 12 reflects the £1.2 million paid at the time, but not the remaining £7.3 million as this has not been deducted.

PART THREE

Challenges to be managed for the successful delivery of the Programme

3.1 This part of the report sets out five main challenges that need to be managed for the successful delivery of the Programme. The challenges are, of course, interdependent and success or failure in any one area will impinge on others.

Challenge 1: Achieving strong leadership and governance

National leadership

Relevant Committee of Public Accounts conclusion, Twentieth Report of Session 2006-07

Conclusion 6: We are concerned that leadership of the Programme has focused too narrowly on the delivery of the IT systems, at the expense of proper consideration of how best to use IT within a broader process of business change. The frequent changes in the leadership of the Department's work to engage NHS organisations and staff have damaged the Programme and convey that the Department attaches a low priority to this task. The Department should avoid further changes in the leadership of this work, beyond those necessary to improve its links with clinicians, and strengthen the links between the Programme and the improvement of NHS services that the Programme is intended to support.

3.2 Since April 2006 leadership of the Programme has rested with the Chief Executive of the NHS as the Senior Responsible Owner, in recognition of the NHS's central role in delivery and benefits realisation. At the time of our work, the future leadership of NHS Connecting for Health was unknown following an announcement by the then Director General of IT in summer 2007 that he would be stepping down. The Chief Operating Officer and his team kept the Programme moving forward over the following months. In January 2008 the Director General of IT left after more than five years in his post.

3.3 Following a review, the Department is to put in place a revised governance structure for handling informatics with two new appointments – a Chief Information Officer, who will focus on delivering the Department's overall IT vision, and a Director of IT Programme and System Delivery, who will manage NHS Connecting for Health and partnerships with the NHS. Until the appointments have been made, the Chief Operating Officer of NHS Connecting for Health is fulfilling the second of these roles.

3.4 On a Programme of this size and complexity, communications are both vitally important and difficult, and the people we interviewed confirmed the importance of getting communications right to help maintain confidence in the Programme. At national level, most communications come from NHS Connecting for Health specifically rather than the wider Department. NHS Connecting for Health has its own website which makes available a considerable volume of information about the Programme's achievements, together with information on service availability, guidance for the NHS and communications for patients. During the course of our work, however, concerns were raised about a need for greater openness and realism in presenting what remained to be done as well as what had been achieved.

3.5 NHS Connecting for Health's National Programme Office provides central programme management services to support the planning, control and reporting of the Programme, including compiling a single source of data to report progress against implementation plans. Large volumes of data are available to help manage different aspects of the Programme, but distilling and marshalling the data into useful progress reports is a challenge and in producing this report, we had difficulty in collating to a reasonable degree of precision the current position relative to what remains to be done, particularly in relation to the deployments by the Local Service Providers. With a view to

improving progress reporting, since November 2007 NHS Connecting for Health has been developing an electronic tool which is intended to provide a 'roadmap' of progress across the Programme.

Local ownership

Relevant Committee of Public Accounts conclusion, Twentieth Report of Session 2006-07

Conclusion 7: The Department should clarify responsibility and accountability for the local implementation of the Programme. At a time when many changes are taking place in the configuration of the local NHS and a range of other initiatives require implementation, it is essential that Chief Executives and senior managers in the NHS understand the role they need to play in the implementation of the Programme. The Department should make clear to Chief Executives and senior managers their objectives and responsibilities for local implementation, and give them the authority and resources to allow local implementation to take place without adversely affecting patient services.

3.6 The establishment of a National Programme for IT which procured systems centrally rather than locally was driven by the Department's desire to address what had previously been a haphazard approach to IT procurement, to achieve value for money and to deliver integrated systems which could be upgraded in the future at reduced cost. Much of the Programme's implementation has to be locally driven, however, and the Committee of Public Accounts recommended that the Department should clarify responsibility and accountability for local implementation.

3.7 Making clear local responsibility for the Programme was an area in which the Department had already started to take action. In August 2006, following our report, the Acting Chief Executive of the NHS appointed the Chief Executives of the 10 Strategic Health Authorities as Senior Responsible Owners for implementation of the Programme and realisation of benefits for their part of the NHS. Each Chief Executive was to appoint a Chief Information Officer to support them in this role.

3.8 In October 2006 the Department initiated the 'National Programme for IT Local Ownership Programme', to strengthen local ownership and governance and re-position the Programme as part of mainstream NHS business, and in April 2007 accountability for implementing the Programme formally transferred to the local NHS. The Department and the NHS have developed a comprehensive operating model, which outlines their revised responsibilities in delivering the Programme. Among other things, NHS Connecting for Health remains responsible for the contractual relationship with the Local Service Providers, though the Strategic Health Authorities now have access to the finance and commercial sections of the contracts.

3.9 The Local Ownership Programme allows the NHS a greater role in developing the systems and in the planning and timing of system deployments, working with the Local Service Providers. Prior to the transfer of responsibility, detailed work was done to design the governance arrangements and help prepare the Strategic Health Authorities for their new role, including assessing key areas of risk and developing mitigation strategies. Steps were also taken to boost capacity and capability, and in July 2007 nearly 200 staff and contractors transferred from NHS Connecting for Health to the Strategic Health Authorities. In addition, funding of £25.5 million in 2007-08 and £30 million a year from 2008-09 is being transferred to the Strategic Health Authorities to reflect the transfer of responsibility.

3.10 Reflecting the split between the Local Service Providers, the Strategic Health Authorities are working together in three groups – London (where there is one Authority), the South (three Authorities), and the North, Midlands and East (six Authorities). Each group has established a Management Board, which is responsible for co-ordinating and overseeing the Programme in their area, and has appointed a Programme Director to work with the Strategic Health Authorities' Chief Information Officers.

3.11 The Local Ownership Programme has been widely welcomed by people working in the NHS. While at the time of our work the new structures were still bedding in and the impact of the changes was in the main yet to be felt, staff from the Strategic Health Authorities spoke positively about the fact that the NHS now had greater control and influence over key decisions, which had in turn obliged the NHS to recognise its central role in delivering the Programme. External bodies we consulted agreed that the Local Ownership Programme should enhance engagement at local level. They stressed that, for the benefits to be realised, it was important for the Strategic Health Authorities and Trusts to have the necessary authority and expertise to fulfil their new role and to ensure that in practice, as intended by the operating model (paragraph 3.8), roles were clear and not duplicated.

3.12 In the highly devolved NHS, however, the practical reality for the Strategic Health Authorities' accountability in their areas – and for the NHS Chief Executive as the Senior Responsible Owner for the Programme as a whole – is far from straightforward. So, for example, while the Strategic Health Authorities can suggest a timetable for future deployments, in practice decisions about when a new care records system should be deployed lie with Trust Boards and their Chief Executives, taking account of the implications for patient care and safety and the efficient and effective running of their Trust.

Challenge 2: Maintaining the confidence of patients that their records will be secure

3.13 For the Programme to deliver the expected benefits for patients and the NHS, patients need to be content for their personal and clinical data to form part of the Care Records Service. While all patients will have a Detailed Care Record, they will be able to exercise a number of choices in relation to the Summary Care Record. If large numbers of patients were to choose not to have or not to share a Summary Care Record, this part of the Programme would be jeopardised.

Patient engagement

3.14 From the outset the Programme had a public and patient engagement programme and, to raise the profile of this work, in January 2007 a Patient Lead was appointed. The Patient Lead described her role to us as to hold NHS Connecting for Health to account for the level of public and patient engagement with the Programme. Engagement includes informing patients about developments, consulting them about proposals and options, and ultimately involving them directly in decisions about the Programme.

3.15 At present the main focus of patient engagement work is the introduction of the Summary Care Record. Public information programmes will be implemented across the country at the point at which full implementation of the Summary Care Record is imminent, expected to start during 2008. In the meantime, efforts have concentrated on the five early adopter areas (paragraph 2.3). In Bolton, the first adopter, the Primary Care Trust sought to engage patients in a variety of ways, including via the local media, roadshows and stands in GP practices. Assessing the effectiveness of the public information campaign has been a key part of the evaluation of the early adopter programme.

3.16 Every patient in the early adopter areas has also been sent a letter from their GP surgery or Primary Care Trust to inform them of the plans to create a Summary Care Record for them. Patients will be assumed to be content for a record to be created and shared unless they explicitly state otherwise. If they wish to limit access, patients have three choices, which they can make at any time (**Figure 14**). Initially the record will contain demographic information and details of allergies, adverse reactions and current medication, but in due course it may also include more detailed information about a patient's medical history and treatment, provided the patient is content for this information to be added.

3.17 Early indications are that only a very small proportion of patients are choosing not to have a Summary Care Record. Data from the early adopter Primary Care Trusts showed that at 31 March 2008, 0.76 per cent of patients had chosen not to have a Summary Care Record created, and a further 0.02 per cent had chosen to have a record created but not shared outside their GP surgery without their consent¹⁰.

¹⁰ Information on the number of patients having a Summary Care Record created but with some information excluded is not available, as this is a matter discussed between the patient and their GP.

14 Patients' options in relation to the Summary Care Record

Full access

- Unless they state otherwise, patients will have a Summary Care Record created, which can be accessed by NHS staff treating them across England.

Limited access

- Patients can ask not to have a Summary Care Record created at all.
- Patients can ask for certain information not to be included in their Summary Care Record.
- Patients can ask for their Summary Care Record not to be accessible by anyone outside their GP surgery without their explicit consent.

Source: NHS Connecting for Health

3.18 As now, patients will have the right to see their own care records and they will also be able to register to view their Summary Care Record online through HealthSpace¹¹, another part of the Programme. Given the confidential nature of the information contained in the Summary Care Record, the registration process for HealthSpace involves verification of the patient's identity, including a face-to-face meeting with a registration agent in the local Primary Care Trust.

Security of patient data

3.19 A key factor in whether patients choose not to have a Summary Care Record will be whether patients are confident that their data will be secure and handled appropriately. GPs also need to be assured that the confidentiality of their patients' care records will be protected and the British Medical Association told us that if concerns around the safety and security of patient information were not answered, GPs might refuse to upload their patients' records. GPs are also expected to be the main source of advice to patients, and the experience of the Primary Care Trust in Bolton was that GPs who were not fully supportive of the Programme could have a big influence on the proportion of patients who choose not to have a Summary Care Record.

3.20 To help provide assurance about data security and confidentiality, from 2003 the Department and the NHS put considerable effort into developing the 'Care Record Guarantee', in conjunction with patient and citizen groups. The Guarantee sets out the principles that the Department and the NHS will apply in handling electronic care records (**Figure 15**).

15 Key principles in handling electronic care records

- An individual accessing a patient's records must be involved in their care and thereby have a 'legitimate relationship' with the patient.
- To access the care records system, the individual must have a Smartcard, protected by a chip and a passcode.
- The individual will see only information appropriate to their role.
- The individual will automatically have their details recorded (who they are and what they did), thereby providing an audit trail.

Source: Summary of NHS Care Record Guarantee (revised and re-issued August 2007)

3.21 Maintaining the security and confidentiality of patient data is crucial to the success of the Programme, and to its reputation and the reputation of the suppliers involved. For all care records, the principles of information security require that all reasonable care is taken to prevent inappropriate access, modification or manipulation of data. To this end, NHS Connecting for Health has set out policies on secure processing and storage of patient data, and the secure transmission of patient data between users.

¹¹ HealthSpace is a secure Internet site developed by NHS Connecting for Health where patients can store their personal health information, such as height, weight and blood pressure.

3.22 We reviewed the contractual provisions on data security, discussed security issues with NHS Connecting for Health and the Local Service Providers, and visited one of BT's data centres, which holds patient data including Detailed Care Records. It was clear that all were taking their responsibilities for data security seriously and a range of controls have been put in place to prevent unauthorised access to patient data. Appendix 2 outlines the Programme's arrangements for securing care records and controlling access to them. Key safeguards include:

- the N3 network is protected by multiple security measures and intrusion detection measures, and communications via the N3 network are encrypted;
- NHS and commercial organisations that require a connection to the N3 network need to comply continuously with the relevant information governance standards and procedures;
- the NHSmail system is protected by security measures and messages are encrypted to allow the secure transfer of patient and clinical data between NHSmail users;
- data is held on centralised servers managed by the Local Service Providers, rather than at individual NHS Trusts or GP surgeries; and
- users are not able to download data in bulk as access is granted to one patient's records at a time – downloads of data must be specifically requested, authorised and securely transferred.

3.23 While the suppliers are responsible for ensuring the security of the IT systems, users are responsible for safeguarding any data they access and security therefore depends on the actions of the NHS and individual members of staff. As the Care Records Service is implemented more widely, increasing numbers of NHS staff will potentially have access to more patient data, with access managed in line with the principles set out in the NHS Care Record Guarantee (Figure 15).

3.24 Each NHS organisation employs a person known as a 'Caldicott Guardian' who is responsible for overseeing patient confidentiality in their organisation. They are responsible for reviewing the 'alerts' that the Care Record Service automatically raises when there may have been a breach of patient confidentiality, for example if a user overrides a patient's request that his or her care record data is not shared across organisational boundaries. In carrying out their role, Caldicott Guardians will be able to draw on audit reports showing which users have accessed a specific patient's record, and which patient records were accessed by a specific user.

3.25 NHS staff are bound by data protection legislation and the NHS Code of Practice on confidentiality. NHS guidance makes clear that breach of confidence, inappropriate use of health records or abuse of computer systems may lead to disciplinary measures, bring into question professional registration, and possibly result in legal proceedings. The professional codes for doctors and nurses also require them to ensure that they protect against the improper disclosure of patient information at all times. For example, the General Medical Council advises that doctors "must be satisfied that there are appropriate arrangements for the security of personal information when it is stored, sent or received by fax, computer, e-mail or other electronic means".

3.26 In the light of concerns about public sector data protection, and in particular the security of information being transferred between locations and organisations, in December 2007 the Chief Executive of the NHS wrote to NHS Chief Executives restating key responsibilities and accountabilities for information governance and requiring them to check their arrangements for securing data in transit. In addition, the Strategic Health Authorities are conducting a detailed review of all aspects of data security across their part of the NHS.

3.27 Suppliers are required to notify NHS Connecting for Health of security incidents. Security incidents which relate to locally managed processes rather than to suppliers, such as the loss of Smartcards, are dealt with by the local NHS and there is no requirement for them to be notified to NHS Connecting for Health. Since April 2006, five security incidents have been reported to NHS Connecting for Health, although two of the five were subsequently found to be failures of process rather than system incidents. The remaining three cases arose when authorised users of the systems found they could view more patient data than they should have been able to view. Enhancements have been made to address the cause of two of the incidents, and the solution for the third is to be included in the next release of the software later in 2008.

Challenge 3: Securing the support and involvement of clinicians and other NHS staff

Relevant Committee of Public Accounts conclusion, Twentieth Report of Session 2006-07

Conclusion 5: The Department needs to improve the way it communicates with NHS staff, especially clinicians. The Department has failed to carry an important body of clinical opinion with it. In addition, it is likely that serious problems with systems that have been deployed will be contributing to resistance from clinicians. It should ask the heads of the clinical professions within the Department, such as the Chief Medical Officer, to review the extent of clinical involvement in the specification of the systems, and to report on whether they are satisfied that the systems have been adequately specified to meet the needs of clinicians.

Tracking the views of clinicians and other NHS staff

3.28 To track awareness and understanding of the Programme in the NHS, NHS Connecting for Health has commissioned Ipsos MORI to carry out a series of surveys. We presented results from the first survey, conducted in July 2005, in our first report. A second survey followed six months later in February 2006 and a third in May 2007¹². At the time of our work, NHS Connecting for Health had not determined its plans for future surveys.

3.29 NHS Connecting for Health modified the content of the third survey in the light of feedback from the Strategic Health Authorities about what information would be useful to support their communications and engagement activity. Among the changes was that NHS staff were no longer asked how favourable they were towards the Programme so views on this question, which we covered in our previous report, cannot be tracked over time.

3.30 Key findings from the third survey included the following points, with more detail set out in Appendix 3.

- Levels of familiarity with the Programme had generally increased, after falling between the first and second surveys, although less than half of doctors, allied health professionals and nurses responded that they knew 'at least a fair amount' about the Programme.
- Aside from information management and technology managers, less than 30 per cent in the other groups of staff had had an opportunity to shape decisions about the new IT systems, although the majority did not consider they had a lot to contribute to the planning of IT changes.
- Most staff thought the Programme would improve patient care and patient safety (with the exception of administrative staff in respect of patient safety), although the level of agreement varied considerably between the different staff groups.
- Staff having access to patient information when they need it was rated as the most important in a series of potential benefits. High ratings were also given to good access to information about patients making diagnosis easier, sharing X-rays electronically speeding up diagnosis, and fewer mistakes being made when dispensing medication using clearly legible electronic prescriptions.

¹² For the third survey, Ipsos MORI conducted 2,301 telephone interviews with staff from six groups – doctors, nurses, allied health professionals, NHS managers, NHS information management and technology managers, and administrative staff. The survey was designed as six independent surveys of six staff groups, not one survey encompassing all NHS staff.

Securing the support of clinicians and other NHS staff

3.31 The success of the Programme will be largely determined by the support it enjoys among clinicians and other NHS staff using the systems. In the last two years, NHS Connecting for Health has taken steps to strengthen engagement with clinicians. In August 2006 it appointed the first Chief Clinical Officer for the Programme, whose role is to enhance clinical leadership of the Programme and ensure that improving the quality and safety of patient care is embedded in every aspect of NHS Connecting for Health's work (**Figure 16**). The Chief Clinical Officer is supported by an Office of some 50 staff, including two National Clinical Directors for primary care and secondary care. Spending by the Chief Clinical Officer totalled £6.0 million in 2007-08, against a budget of £12.2 million.

3.32 The Chief Clinical Officer supervises the clinicians employed to work on the Programme, including the National Clinical Leads, who work part-time for the Programme while continuing with their clinical work. The Department has expanded the network of Clinical Leads from the seven appointed in 2004 to 15 in 2008. As well as Clinical Leads for four occupational groups (GPs, hospital doctors, nurses, and allied health professionals), appointments have been made for midwifery, pathology, diabetes care, public health, medications management, ophthalmology and mental health. There is also a National Clinical Lead for patient safety whose role includes providing assurance about the safety of the new systems and considering the potential of IT to help address known patient safety issues.

3.33 The role of the Clinical Leads is to act as advocates for the Programme and to facilitate two-way communication between NHS Connecting for Health and staff within the NHS, for example via meetings with professional bodies, presenting at conferences and other events, and producing newsletters. The Clinical Leads also work with the National Advisory Groups, which include representatives of professional organisations, including the Royal Colleges. The Groups provide a forum for debate, facilitate consultation about the Programme, and offer clinical advice on health informatics issues.

16 The role of the Chief Clinical Officer for the Programme

- To co-ordinate and increase the effectiveness of and assure the clinical input to the Programme's activities and decisions.
- To provide professional supervision of all clinicians engaged in the Programme's work.
- To take overall responsibility for the management of clinical risk.
- To develop and sustain key relationships with clinical stakeholders.

Source: NHS Connecting for Health

3.34 Lack of engagement with users of the systems was seen by the external bodies we consulted as one of the main risks to delivery of the Programme. Some bodies considered that engagement had improved in recent years but most felt there was scope for further improvement to increase the likelihood of the Programme's success. Examples of improvements that were suggested included more open communications from NHS Connecting for Health and providing clinicians with more advance notice of events to make it easier for them to attend.

Involving clinicians and other NHS staff

3.35 NHS Connecting for Health has also involved clinicians and other NHS staff in the design, build and testing of the Programme's systems. At this stage of the Programme, the focus is particularly on the development of the software for the care record. As the decisions made by representative staff have an impact on how the software is delivered to all Trusts within a region, it is important that there are effective communication and consultation mechanisms in place to help achieve consensus and acceptance of design decisions.

3.36 In the North, Midlands and East, a core team was established in early 2007 to assist with the development of the Lorenzo software. The team comprises 16 clinical and operational staff from a range of care settings and professional backgrounds, who work for NHS Connecting for Health on a full or part-time basis. The team replaced the more temporary arrangements that had previously been in place to provide ad hoc advice, which had suffered from a lack of continuity and difficulties in getting staff released by NHS Trusts to work on the Programme. The team provides CSC and iSOFT with input from those with current or recent experience from across the NHS. Team members also act as advocates for Lorenzo, making presentations and demonstrating the developing system to NHS staff.

3.37 The team has been involved in a variety of workstreams, documenting in detail the requirements of, and developing clinical scenarios for, different aspects of health care, such as mental health, theatre management, and requests and results reporting. The team considers that, while its individual impacts are generally small, collectively they have made a major difference to the usability of Lorenzo and to how it will be received by NHS staff when it comes to be deployed.

3.38 Similarly, in London and the South, the development of the Millennium software is being informed by NHS staff. In London, a 'programme design centre' has been established, comprising staff from the London Programme for IT and from BT, the Local Service Provider, consulting with staff from Acute Trusts across the city. Those NHS staff who can commit the time spend around a day and a half a week providing expertise to help tailor the design of Millennium to meet the needs of the acute sector, while others attend workshops to review developments. In the South, NHS staff from clinical and administrative backgrounds contribute to the design process at Fujitsu, with a network of subject experts who review and tailor the design of Millennium to meet the needs of the NHS. In addition, design centres have been set up in Bristol and Southampton to assist with the design of elements of future releases of the software.

3.39 The NHS Trusts we visited told us that they had some opportunities to influence the design of the care records systems and choice over which elements of functionality they wished to take in a deployment. Processes were in place to report specific issues arising after the deployment of a new system, either through user groups or help desks, which could also inform the design of future software releases.

Responding to the concerns of GPs about their choice of systems

3.40 Since we last reported, the Department has also taken forward the 'GP Systems of Choice' scheme, announced in March 2006 in response to GPs' concerns that the choice of systems offered by the Local Service Providers was too limited. There had also been delays in the delivery of the Local Service Providers' integrated solutions, which would allow GPs to access all the functionality available under the Programme. Under GP Systems of Choice, GPs are able to choose from the systems provided by the suppliers on an approved list in addition to the systems provided by their Local Service Provider.

3.41 To be placed on the approved list, suppliers' systems had to meet standards designed to ensure inter-operability with other parts of the Programme. In September 2007 eight suppliers were awarded a framework contract to supply GP systems. The framework will initially run for two years and may be extended for a further two years if it works well; the contracts awarded under the framework will run for up to four years. The assumption is that by the time the contracts expire, the Local Service Providers will have delivered their integrated GP solutions. Depending on the rate of take-up of the integrated solutions, the Department will need to decide whether the framework should be re-tendered to ensure continuity of service.

3.42 The costs of the eligible systems, including the annual software licence charges and supplier deployment costs, will be funded by the Department. This spending is not regarded as additional since the NHS would have had to meet the costs of GP systems, had 'GP Systems of Choice' not been introduced. The extra cost to the Programme is therefore estimated at £105.9 million, which represents the cost of incorporating an integrated GP solution into Fujitsu's Local Service Provider contract for the South. Unlike the contracts for London and the North, Midlands and East, the original contract for the South had included no requirement to supply an integrated GP solution.

Challenge 4: Managing suppliers effectively

Relevant Committee of Public Accounts conclusions, Twentieth Report of Session 2006-07

Conclusion 4: The Department is maintaining pressure on suppliers but there is a shortage of appropriate and skilled capacity to deliver the systems required by the Programme, and the withdrawal of Accenture has increased the burden on other suppliers, especially CSC. The Department should review with suppliers their capacity to deliver, and use the results of this review to engage, or to get suppliers to engage, additional capacity where required. It should also regularly review suppliers' performance for any signs of financial difficulties potentially affecting their ability or willingness to discharge their obligations. In view of the slippage in the deployment of local systems, the Department should also commission an urgent independent review of the performance of Local Service Providers against their contractual obligations.

Conclusion 8: The use of only two major software suppliers may have the effect of inhibiting innovation, progress and competition. In addition, the fact that the Programme has lost Accenture, Commedica and IDX, three key suppliers, is running late and is having difficulty in meeting its objectives raises doubts over whether the contracts will deliver what is required. The Department should seek to modify the procurement process under the Programme so that secondary care trusts and others can if they wish select from a wider range of patient administration systems and clinical systems than are currently available, provided that these conform to national standards. This approach could have the benefit of speeding up the deployment of new systems and of making it easier to secure the support of clinicians and managers. We are concerned in particular that iSOFT's flagship software product, 'Lorenzo' – on which three fifths of the Programme depends – is not yet available despite statements by the company in its 2005 Annual Report that the product was available from early 2004.

3.43 Successful delivery of the Programme is heavily dependent on the suppliers and sub-contractors, who are developing and deploying the various systems. Of crucial importance are the Local Service Providers, who are responsible for the local systems in different parts of the country, including the care records systems, and for ensuring that these integrate with the national systems that have been developed.

Transfer from Accenture to CSC

3.44 There are currently three Local Service Providers: BT in London; Fujitsu in the South; and CSC (Computer Sciences Corporation) in the North, Midlands and East. This is a change from the position at the outset of the Programme and at the time of our previous report, when there were four Local Service Providers serving five clusters of NHS organisations, as in January 2007 the contracts for the North East and the East transferred from Accenture to CSC¹³.

3.45 The origins of the transfer lay in Accenture's announcement in March 2006 of a \$450 million provision in its accounts for future expected losses relating to the future deployment of systems for the NHS. In summer 2006 discussions took place between NHS Connecting for Health and Accenture aimed at resolving a number of issues relating to the Local Service Provider contracts for the North East and the East, but in September 2006 it was announced that Accenture was to transfer responsibility for the two contracts to CSC.

3.46 In the light of NHS Connecting for Health and Accenture being unable to resolve the issues under discussion, NHS Connecting for Health had considered a range of options and concluded that Accenture's proposal to novate its contracts to CSC was the least risky in terms of delivery of the Programme. Informed by work by the Office of Government Commerce, NHS Connecting for Health was satisfied that CSC had the capacity and capability to take on the additional contracts, and the proposal was accepted by the Secretary of State for Health and by the Treasury. CSC took on some 350 of Accenture's staff and the two companies worked closely together to achieve a smooth transition.

3.47 The contracts transferred to CSC at a value of £1,965 million, £4 million less than the previous contracts with Accenture (Figure 8). In addition, NHS Connecting for Health agreed that Accenture should retain £110 million for the work it had completed, which included the deployment of the iPM care records system (the interim solution) in 13 NHS Trusts. Accenture had previously received £179 million so repaid £69 million to NHS Connecting for Health on novation of the contracts.

¹³ Accenture retained responsibility for delivering the Picture Archiving and Communication Systems in the North East and the East.

Contracts and the need to work flexibly

3.48 The three Local Service Providers told us that the scale and complexity of the Programme made it extremely challenging and all have boosted their capacity since the start of the Programme, in part prompted by NHS Connecting for Health. For example, CSC has reinforced its team with people from its United States operations and BT has also transferred staff to enhance its programme management capability.

3.49 BT confirmed that major programmes of the scale and complexity of the National Programme for IT were rare, and required specific experience and expertise to manage effectively the complex interdependencies between different elements. All the Local Service Providers described how they cannot make progress simply by 'working to the contract', but need instead to be highly flexible to meet the requirements of the NHS. For example, the care records systems being deployed allow a degree of flexibility, and an individual Trust may make a hundred or more change requests before it is prepared to sign off the system as meeting its requirements.

3.50 As well as the novation from Accenture to CSC, there has been an ongoing process of contract resetting to reflect changing circumstances, the need for greater flexibility on the part of Local Service Providers and the NHS than originally envisaged, and to establish more realistic timetables for deploying the care records systems.

- At the same time as the novation in January 2007, CSC's contract for the North West and West Midlands was restated to bring CSC's three contracts into line.
- The contract with BT for London was reset in March 2007 following the switch from IDX to Cerner as the main software supplier. The value of BT's contract increased by £55 million to secure additional functionality requested by the NHS in London.
- At the time of our work, negotiations were ongoing between NHS Connecting for Health and Fujitsu to reset the contract for the South. A 'Heads of Agreement' is expected to be signed in May 2008 as a basis for negotiating detailed contractual changes.

Relations with Local Service Providers

3.51 Relations between NHS Connecting for Health and the Local Service Providers have been maturing, and there are regular meetings and other contacts at senior level, with both sides gradually developing the confidence in each other to work together to deal with the uncertainties and changes that arise during system development and deployment. Both highlighted that the relationship is increasingly collaborative and based on partnership, with aligned objectives to deliver the Programme.

3.52 NHS Connecting for Health has to strike a careful balance in terms of overseeing the main suppliers of the software for the care records systems – Cerner and iSOFT – since they are sub-contractors of the Local Service Providers and do not have a direct contractual relationship with the Department. NHS Connecting for Health does, however, keep in touch with Cerner and iSOFT via the Local Service Providers, including through regular visits to their development sites. NHS Connecting for Health also met IBA prior to its takeover of iSOFT in October 2007 to gain assurance about IBA's commitment to the continuing development of Lorenzo.

3.53 Under the National Programme for IT Local Ownership Programme, relations between the NHS and the Local Service Providers are still relatively immature but improving. Though there have been the fewest Acute Trust deployments in London, the position there is currently the most well-established, due in part to the one-to-one relationship between the Local Service Provider and the single Strategic Health Authority.

3.54 All the Local Service Providers have found it difficult to plan and deploy their resources on a Programme where progress relies on many decisions necessarily made at local level. In this respect, the Programme differs from other major programmes that they have been involved in, in both the public and private sectors. Nevertheless, across the country, the NHS Trusts we visited commented positively on the working relations they had enjoyed with Local Service Provider staff during the deployment process.

Contingency arrangements

3.55 Since the Programme began, one of the Local Service Providers has withdrawn and one of the main software sub-contractors has been replaced. The Committee of Public Accounts raised concerns about a shortage of appropriate and skilled capacity to deliver the systems, and recommended that NHS Trusts should be allowed a greater choice of suppliers. While the Department did not accept this recommendation for the Programme as a whole because it considered that centralised procurement through a small number of suppliers avoided the disadvantages and the expense of the haphazard approach of the past, it did undertake during 2007 a procurement exercise for a framework list of suppliers who can compete for new business if it arises.

3.56 In January 2008 the Department signed framework contracts for 'additional supply capability and capacity' with 38 suppliers, covering information and communication technology services; hardware, infrastructure and associated services; and testing environment and related services. Further contracts for clinical information technology services are expected to be awarded in spring 2008. As well as providing contingency for the Programme, the local NHS can use the listed suppliers to meet new requirements they identify. The framework contracts are not intended to replace the existing Programme contracts but to supplement the supply capacity and enable new requirements to be met.

Challenge 5: Deploying and using the systems effectively at local level

Relevant Committee of Public Accounts conclusion, Twentieth Report of Session 2006-07

Conclusion 7: The Department should clarify responsibility and accountability for the local implementation of the Programme. At a time when many changes are taking place in the configuration of the local NHS and a range of other initiatives require implementation, it is essential that Chief Executives and senior managers in the NHS understand the role they need to play in the implementation of the Programme. The Department should make clear to Chief Executives and senior managers their objectives and responsibilities for local implementation, and give them the authority and resources to allow local implementation to take place without adversely affecting patient services.

3.57 The delivery of the Programme's key objectives relies on the local NHS successfully deploying and using the systems. While the systems are paid for under central contracts, their deployment requires a large resource commitment on the part of Trusts to cover the costs of managing the accompanying major organisational change.

Deploying a new care records system

3.58 We visited 15 NHS Trusts which had implemented new care records systems under the Programme. Overall our visits demonstrated the commitment of local NHS staff, with many working substantial additional hours during key phases of the deployment process. Earlier deployments have tended to be the most problematic, but we saw clear evidence of Trusts spreading the lessons they had learned, largely through informal networks, which most people felt worked best, although occasionally and increasingly Trusts are sharing resources and expertise. For example, in London the Local Service Provider, Strategic Health Authority and Trusts are working together to provide some continuity in deployment teams between one deployment and the next.

Planning a deployment

3.59 One Local Service Provider likened the deployment of a new care records system in a medium to large Trust to the replacement by a major retailer of its whole supply chain system, involving hundreds of stores and every supplier and all the processes in-between. Whatever comparator is used, a deployment of a new care records system is a major undertaking, not least because the Trust has to continue with 'business as usual' while the changeover is taking place.

3.60 Effective and detailed planning is vital to a successful deployment. Guidance is available from NHS Connecting for Health, including generic timetables based on three broad sizes of Trust, although these inevitably cannot fully reflect specific local circumstances. For example, Trusts have different staffing structures which can greatly influence the time required for training, and they may have previously stored different patient data, which can influence the time needed to cleanse and migrate data from the old to the new system.

3.61 The planned timetable for deployment had not been achieved in the majority of Trusts we visited, in some cases repeatedly, for example because systems had not passed successfully through testing. In retrospect, most Trusts that had experienced delays considered they, and the Local Service Provider concerned, had substantially underestimated the time and work required to deploy the new system. The slippage had sometimes had serious implications for staff engagement and training, but it had been necessary to delay the 'go live' date to achieve a smooth transition.

3.62 We asked Trusts and Local Service Providers to give a rough estimate of a realistic timescale from the point at which the decision to deploy a new care records system is taken and planning starts to the 'go live' date. The estimates given were in a fairly narrow range, averaging around a year and extending up to 18 months, depending on local conditions and including time for acceptance testing. BT described the approach it has developed for deployments in London whereby it undertakes detailed consultation with Trusts prior to deployment to get a clear picture of their circumstances, such as the capability of the Trust's own IT staff and the number of locations to which the system has to be deployed, so that it can agree a realistic timetable with the Trust at the outset.

Engagement with clinical and other staff

3.63 NHS Trusts employ a wide range of staff from different backgrounds who use IT in different ways to do their job. The systems to be deployed under the Programme will change the way many staff work, as more and more clinical and other information is routinely captured and processed electronically in a systematic way.

3.64 Seeking the views of staff and managing their expectations is crucial for a successful deployment. All the Trusts we visited had involved clinicians in the implementation process, for example on their project boards, and in one Trust the deployment had been led jointly by the Chief Executive and the Director of Nursing. During our visit to the Trust, many of the staff we spoke to volunteered that this joint arrangement had been very successful.

3.65 Trusts also sought to engage clinicians more widely, including by involving them in mapping work processes and holding roadshows. We saw examples of effective communication strategies, including Trusts which had developed their own range of internal marketing material. Trusts found, however, that it was difficult to engage their clinicians in a meaningful way when the new care records systems as yet offered little clinical functionality (paragraph 3.83) and when there was no realistic training environment for staff to use (paragraph 3.68). Two had decided not to engage with clinical staff until late in the deployment process to avoid raising unrealistic expectations.

3.66 In all the Trusts we visited, the new care records systems brought advantages and disadvantages compared with those they were replacing, and they were inevitably taking some time to work as intended following deployment. In some Trusts, the old systems had been developed over many years, often with the direct involvement of Trust staff. Though these systems were judged unable to support the aims of the Programme (for example, in terms of sharing care records with other parts of the NHS) and were unsustainable in the long term, they did meet the specific needs of the Trust at that point in time. It was therefore common to find that some staff felt a sense of loss in moving to a new system that could only be customised to some extent and over a period of time. This is a frequent response in change programmes, but can be managed by recognising the new system's disadvantages compared with the old system, and acknowledging them to staff during training and in communications about the Programme.

Staff training

3.67 Training was an important component of every deployment we examined and is essential for a Trust to operate as efficiently as possible in the period immediately following the deployment. As noted previously, delays to the deployment timetable can impede a smooth transition as the 'go live' date may be some time after staff have been trained in the new system. Some Trusts we visited needed to provide repeat or refresher training as a result of delays.

3.68 Another common theme was the need for a training environment that was as close as possible to the 'live' system. Most of the Trusts visited expressed dissatisfaction with the generic training environment provided to them, which did not resemble their specific configuration, for example the structures of their outpatient clinics, which may vary from one Trust to another. Some staff were confused when the system went live as it looked different from the one they had trained on.

3.69 Training appeared to be more successful where it was tailored to reflect people's specific roles, rather than generic to all staff. One Trust designed and delivered training in modules that recognised the Trust was responsible for several hospitals that operated in different ways and reflected the role differences between the hospital sites. It is also important to recognise that the new care records systems can result in more staff actively using the system than previously, and some Trusts also provided basic IT training to help staff who were inexperienced in using IT.

Work processes

3.70 To realise the benefits of a new care records system, Trusts need to understand how it will affect their existing work processes, and if necessary redesign them to get the most out of the system. Some Trusts we visited had made efforts to map their work processes prior to the deployment. The mapping can help to identify how best to train staff in the new system and allow remodelling of work processes to spread good practice and make them more consistent across the Trust.

3.71 Most Trusts considered, in retrospect, that they should have done more work to map processes, which would have identified more potential pitfalls and reduced problems or brought earlier benefits after the deployment. In some cases staff were devising workarounds to make the system work with their processes in the way previous customised systems had, and almost all Trusts needed to do additional work subsequently to make sure that staff were using the new system as intended.

Data migration

3.72 Transferring (or 'migrating') data from a Trust's existing system to a new care records system is a major exercise that has serious implications for the ongoing operation of the Trust. All the Trusts we visited had therefore performed 'test runs' to establish whether data would migrate to an acceptable level of accuracy. The greater the volume and complexity of the data to be migrated, the larger and more risky the exercise. Two Trusts felt that they had migrated more data than was needed and that in retrospect they could have been more rigorous about how much historical data needed to be transferred. Some Trusts maintained their old legacy systems as a reference point to minimise the amount of historical data that had to be migrated, though this may not be possible in all cases.

3.73 Prior to migration, Trusts carried out extensive work to check that the records held on their existing systems were complete and accurate. Cleansing the data in this way avoids migrating duplicate and incomplete records, and reduces the scope for errors. The cleaner the data, the smoother the migration to the new system. When data is migrated between the two systems there is a period of time when neither system is available. Paper records must be used during this period and data manually input to the new system when it becomes available. One of the Trusts we visited chose to migrate data in stages to minimise the downtime during the 'go live' period, thus reducing the burden of inputting data.

Relations with Local Service Providers

3.74 A successful deployment relies on effective co-operative working between all parties, and although Trusts do not have a contractual relationship with their Local Service Provider, they need to manage relations effectively. The Trusts we visited had developed strong working relations with the local deployment teams from BT, Fujitsu and CSC, and had found their staff helpful and supportive. Two Trusts suggested that it may well not have been possible for Trust staff to see the difference between the Trust's own people working on the project, the Local Service Provider's team and staff from NHS Connecting for Health, because all three had worked as one cohesive team. The most important element that bound them together was alignment of objectives around achieving a smooth and successful deployment.

Smartcards

3.75 Smartcards and passcodes are used to control access to the Care Records Service via the Spine, although they were not yet in use at all the NHS Trusts we visited because early releases of the Millennium and RiO care records software did not support them. In these Trusts, access was controlled via user names and passwords.

3.76 Trust staff who are to use a Smartcard-compliant system must be issued with working Smartcards before the 'go live' date. Issuing Smartcards to around 1,500 members of staff is a major exercise, and was one area where we found evidence that lessons from earlier deployments were being disseminated. Some Trusts issued Smartcards in tranches in advance of the go live date to manage the process better and also tested the Smartcard at the point of issue to check it was working correctly, thus avoiding potential disruption caused by faulty cards.

3.77 The individuals who issue Smartcards and assign roles in each Trust are called the 'Registration Authority'. Before issuing a Smartcard, the Registration Authority is responsible for verifying the identity of the individual NHS staff member concerned, drawing on at least three forms of identity. Individuals are granted access to patient information based on their role and level of involvement in patient care, and where Smartcards were in use at the Trusts we visited, Trusts were able to tailor the access provided under each role to meet local needs.

3.78 The Registration Authority is able to issue Smartcards and change the levels of access on existing Smartcards beyond the confines of their Trust, subject to authorisation procedures. Two Trusts reported concerns that they were not currently able to obtain reports locally that showed the role of each Smartcard holder and an audit trail of any changes, although this report can be produced centrally.

3.79 The Trusts we visited confirmed that Smartcards were being used as intended. Some Trusts highlighted, however, that system performance had important implications for the effectiveness of the Smartcard arrangements. If it took staff a long time to log into the system using their Smartcard, they might be increasingly minded to leave their card in the 'reader' when they went for a break or to share cards rather than logging in with their own card, in contravention of the rules.

3.80 A technical enhancement is now available to address the risk of users seeking to save time by leaving their Smartcard in the reader when they take a short break. The enhancement keeps a user's session alive and secure even when their Smartcard is removed from the reader; re-inserting the Smartcard then initiates a shorter authentication process and allows users to continue working at the point they left off. Individual Trusts are responsible for deciding whether to take up (and pay for) this enhancement.

Using the new care records systems

3.81 Once a new care records system has been deployed a great deal of ongoing effort is required to realise the benefits, and successful realisation depends on the technical performance of the system, the level of staff acceptance and the ongoing support provided.

System performance

3.82 The installation of a major new system will always create challenges for staff because it is likely to require fundamental changes in the way they work. In all the Trusts we visited there had been a certain amount of dissatisfaction with the new system, especially in the period following the deployment. Many staff had come to prefer the new system to the one it had replaced, though some continued to be dissatisfied, in particular where issues they had raised had not yet been dealt with.

3.83 A key factor in staff acceptance was the level of functionality provided by the new system relative to the Trust's previous one. The care records systems that had been deployed to date in the Trusts we visited had limited clinical functionality. Although some Trusts now had more functionality, one Trust had replaced an elderly but fully integrated administration and clinical system with a new care records system and several non-integrated clinical systems; this change had a very negative impact on the Trust's ability to engage clinical staff. Increased functionality is planned for later releases of the care records software.

3.84 There were also some common features of the new systems that had an impact on the level of acceptance. These related principally to the ease with which staff could navigate through the systems and perform their roles. Many staff found that the versions of the systems that had been deployed were less intuitive than they would have liked and it took longer to record initial patient information than it had done previously, in part because more information needed to be captured for reports to be generated automatically. In many cases, practical problems resulted in staff using the systems in different ways within the same Trust. Such lack of consistency can, however, affect the accuracy of reporting if information is not entered correctly. The Local Service Providers have recognised some specific areas of difficulty and are seeking to address them in future releases of the systems. Trusts also have a role in developing guidelines for using the systems consistently and ensuring these are followed across their organisation.

3.85 All the Trusts we visited had experienced some technical problems with the new care records systems, although the nature of the problems varied. All Trusts had procedures in place for staff to raise issues and for reporting them to the Local Service Provider. Trusts reported, however, that resolving issues often took a long time and in some cases could be done only through a later release of the software. A particular issue for Trust staff using the systems was a lack of visibility of the resolution process, for example knowing what the timeline for resolving a particular issue was and what progress had been made. In London, BT has put in place a process for tracking issues until they have been resolved.

3.86 On many of our visits we found evidence to indicate that some staff were working round issues themselves rather than reporting them, and during our interviews, and especially our observations of the systems with frontline staff, people highlighted problems that were not previously known to the Trust management.

Ongoing support

3.87 To supplement staff training, Trusts had used 'floorwalkers' immediately after the deployment to help staff use the new system. While in the early deployments Trusts had found that the floorwalkers had themselves not been sufficiently familiar with the system being deployed, in most of the later deployments the floorwalkers were viewed as an essential and effective resource, and some staff felt it would have been beneficial to use them for a longer period.

3.88 All the Trusts we visited had put in place arrangements to provide ongoing support to staff using the new systems, including training 'champions' to act as the first point of contact for queries, and setting up local helpdesks. Where issues cannot be resolved at local level, they can be referred to the NHS Connecting for Health Service Desk, run since December 2006, by Fujitsu. The Service Desk provides a helpline, e-mail and Internet logging facility for technical questions about the Programme's systems. During our visits, feedback was that the performance of the Service Desk was universally poor. NHS Connecting for Health and Fujitsu recognise there have been problems with the operation of the Service Desk and are taking steps to improve performance, including ensuring that staff employed on the Service Desk have sufficient knowledge both of the technical architecture of the systems and of the NHS.

Deploying and using the Picture Archiving and Communications Systems

3.89 The Picture Archiving and Communications Systems (PACS) allows images such as X-rays and scans to be stored electronically and viewed on monitors so that NHS staff can examine and manipulate the images at any compatible terminal in the hospital. Although 50 Acute Trusts in England already had a PACS system in some form, PACS was brought into the Programme in September 2004 to speed up the rate of deployment and enable centralised storage of images, and full inter-operability and compatibility with the Programme's other services. The deployment of PACS by the Local Service Providers was completed ahead of schedule and from December 2007 all Acute Trusts in England had access to this service.

3.90 The Trusts we visited were positive about the clinical benefits of the Picture Archiving and Communications Systems. In particular, staff felt it aided diagnosis through the flexibility of being able to manipulate images easily. There was also evidence that the Systems were already changing working practices within Trusts, with for example doctors using mobile terminals to present and discuss scans with patients at their bedside. Trusts saw further potential advantages in being able to share images across the local healthcare community. Although sharing of images was not possible at the time of our visits, the aim is for all Trusts to have some form of image sharing available by the end of March 2009.

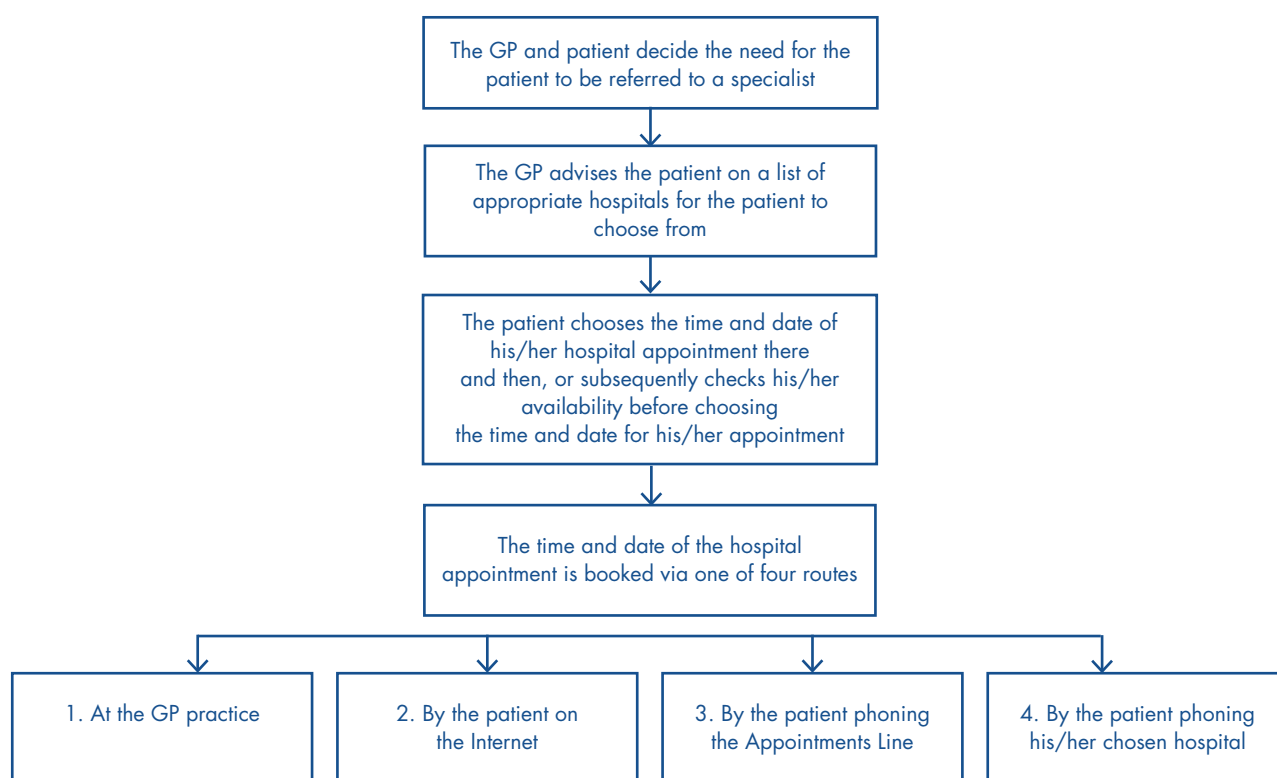
Deploying and using Choose and Book

3.91 Choose and Book is a national system that will provide a common means of booking appointments for NHS services using the Internet, a telephone booking service through NHS Direct or through a GP's IT system¹⁴. Patients will be able to visit their GP and either choose a hospital and book an appointment there and then, or book a suitable appointment themselves at a later date using a unique reference number (Figure 17).

3.92 Choose and Book was launched in July 2004. The system is now nearly fully deployed with all Trusts able to receive appointments through Choose and Book, though just under 20 per cent do not have the functionality to allow direct bookings to be made as it has not been economically viable to upgrade their existing systems. Where direct booking is not used, Trusts receive bookings from patients by telephone under what is known as the 'indirectly bookable service' (option 4 in Figure 17). Under this service, patients are able to choose an appointment only at the Trust they telephone rather than from a range of different Trusts.

3.93 The utilisation of Choose and Book requires changes in working practices in both GP practices and Trusts. Utilisation has been lower than originally anticipated, with the number of bookings well behind what was envisaged. In total 6.7 million bookings had been made by January 2008 against an original forecast of 39 million. The Department is taking steps to encourage the utilisation of Choose and Book, including working with Strategic Health Authorities to tackle technical issues and encourage GPs to use the system. Specific points raised during our visits to Trusts as factors that may currently be affecting the utilisation of Choose and Book include the number of appointment slots Acute Trusts make available on the system and whether Trusts allow bookings to be made with named consultants.

17 Summary of the Choose and Book process



Source: National Audit Office

¹⁴ The early development of Choose and Book was covered in a report by the Comptroller and Auditor General in January 2005, *Patient choice at the point of GP referral* (HC 180, Session 2004-05).

3.94 Usage is increasing and since December 2007, 50 per cent of new outpatient appointments have been booked through Choose and Book. Utilisation rates vary considerably, however, with some Primary Care Trusts above 90 per cent and others below 20 per cent. One Trust we visited, which has one of the highest rates, attributed it to the fact that staff had gone out to meet GPs and provided one-to-one training and demonstrations to highlight the benefits of the system. Primary Care Trust staff were also providing ongoing support and advice to local GPs.

3.95 GPs have also raised issues with NHS Connecting for Health about system performance when accessing Choose and Book from their local system through the Spine. Some have found it very slow to access the system and book appointments and consequently impractical during a patient consultation. For this reason, GP practices where administrative staff make bookings tend to make more use of Choose and Book. NHS Connecting for Health has examined the speed of accessing the Choose and Book system and has developed a tool to measure the Choose and Book process from end to end. This revealed that although the performance of the central system could be improved, local IT configuration, for example within the GP surgery itself, could dramatically affect the speed with which bookings could be made.

APPENDIX ONE

Study methods

1 This report is our second about the National Programme for IT in the NHS. It considers the progress which has been made since our first report¹⁵, published in June 2006, and the subsequent report by the Committee of Public Accounts in March 2007¹⁶, to which the Government responded in July 2007¹⁷.

2 The purpose of this report is to provide an update on the action taken in response to the conclusions and recommendations made by the Committee of Public Accounts, and on the progress being made in delivering the key constituent systems of the Programme. Our work focused on three main areas: delivery, governance, and costs and benefits.

Interviews at NHS Connecting for Health

3 We carried out a series of interviews with senior staff at NHS Connecting for Health within the Department of Health, including the Chief Operating Officer, the Director of IT Service Implementation, the Finance Director, the Chief Clinical Officer, the two National Clinical Directors, and the Patient Lead.

The areas we covered in interviews at NHS Connecting for Health

- Progress in developing and deploying the systems.
- Governance arrangements, including the Local Ownership Programme.
- Supplier management and performance.
- Arrangements for engaging with clinicians and other NHS staff, and with patients.
- Data security.
- The costs of the Programme and payments to suppliers.
- Benefits realisation.

4 We also attended as observers meetings of the Board which oversees the Programme. The Board is chaired by the Chief Executive of the NHS, who is the Senior Responsible Owner for the Programme.

5 We met with members of the 'Lorenzo core team' of NHS staff who are assisting with the development of iSOFT's Lorenzo care records software, which will be deployed by CSC in the North, Midlands and East. We discussed the team's role in helping to develop the software and the impact of its work. We also attended a demonstration of the planned first release of the Lorenzo software.

Preparation of project progress reports for each element of the Programme

6 Drawing on Programme Board papers and other material from NHS Connecting for Health, we prepared progress reports for the individual projects that make up the Programme – the infrastructure projects, the national applications and the local systems. The progress reports are presented in Volume 2 of this report, and set out for each project:

- background information, including what the system does and who the supplier is;
- details of development and deployment;
- information on service availability and usage; and
- estimated cost and expenditure to date.

¹⁵ *The National Programme for IT in the NHS* (HC 1173, Session 2005-06).

¹⁶ *Department of Health: The National Programme for IT in the NHS* (Twentieth Report of Session 2006-07, HC 390).

¹⁷ Treasury Minute on the Twentieth Report from the Committee of Public Accounts (Session 2006-07), Cm 7125.

Review of key documents

7 To develop our understanding of all the areas we were examining and pin down matters of detail, we examined key NHS Connecting for Health documents, relating to the study themes of delivery, governance, and costs and benefits.

The key documents we examined

- Weekly and monthly progress reports, and Programme Board papers, covering all aspects of the Programme.
- Papers relating to governance, including the introduction of the Local Ownership Programme.
- Papers relating to supplier and contract management, including payment schedules and contract documents.
- Papers relating to the change of Local Service Provider from Accenture to CSC in the North East and the East.
- Papers relating to system performance and performance deductions.
- Papers relating to estimated costs.
- Papers relating to benefits, including the first annual benefits statement.
- Papers relating to engagement with clinicians and other NHS staff, including material from the Office of the Chief Clinical Officer.
- Results of the surveys of NHS staff carried out for NHS Connecting for Health by Ipsos MORI.

Review of the cost of the Programme

8 The focus of our work was on the cost of the Programme to the public purse. We examined the estimated costs, covering both central and local expenditure; changes in the estimates since the outset of the Programme and explanations for the changes; and outturn to date against projected expenditure.

9 In terms of payments from NHS Connecting for Health to Local Service Providers and other suppliers, we reviewed the advances paid, the length of time between system deployments and payment authorisation, and the financial deductions imposed for performance failures.

Work within the NHS

The London, South, and North, Midlands and East Programmes for IT

10 We carried out interviews with the three local Programmes for IT – London, the South, and the North, Midlands and East – to seek views on the Programme, in particular on the ‘Local Ownership Programme’ and on progress on the care records systems. The meetings included Strategic Health Authority Chief Executives and Chief Information Officers, and the three NHS Connecting for Health Programme Directors.

Visits to NHS Trusts

11 For our main fieldwork, we visited 15 NHS Trusts, including Acute Trusts, Mental Health Trusts, and Primary Care Trusts, spread across the three Local Service Provider areas. All the Trusts had implemented new care records systems under the Programme in the two year period from July 2005 to July 2007. The focus of our work was on the care records systems but we also covered other systems, including the Picture Archiving and Communications Systems, and Choose and Book.

The NHS Trusts we visited

Trust	Type of Trust	Strategic Health Authority
London		
Barnet and Chase Farm	Acute	London
West London	Mental Health	London
Barnet	Primary Care	London
South		
Surrey and Sussex	Acute	South East
Milton Keynes	Acute	South Central
Winchester and Eastleigh	Acute	South Central
Weston	Acute	South West
Milton Keynes	Primary Care	South Central
North, Midlands and East		
University Hospital Birmingham	Acute	West Midlands
Scarborough and North East Yorkshire	Acute	Yorkshire and the Humber
University Hospital South Manchester	Acute	North West
Worcestershire	Mental Health	West Midlands
Derbyshire	Mental Health	East Midlands
Cambridgeshire	Primary Care	East of England
Manchester	Primary Care	North West

12 During the visits, we interviewed senior Trust staff involved in planning and managing the deployment of the care records systems. We also talked to frontline clinical and administrative staff who were using the systems, and saw the systems in operation. We sought views on the experience of deploying and using the systems to help us identify good practice and lessons for future deployments.

The areas we covered in interviews at NHS Trusts

- Planning the deployment of the care records system, including timetable, engagement with clinicians and other staff, training, work processes, and data cleansing and migration.
- Using the care records system, including system performance and staff views of the system.
- Deploying and using the Picture Archiving and Communications Systems, and Choose and Book.
- Arrangements for issuing and using Smartcards.
- Governance arrangements, including the 'Local Ownership Programme' and relations with the Local Service Provider.
- Costs and benefits.

13 In addition, as part of our work to plan the study, we visited Homerton Hospital NHS Trust in East London and Nottingham University Hospitals NHS Trust to see the systems in operation and develop our understanding of the issues involved in deploying and using the systems.

14 We visited Bolton Primary Care Trust, one of the early adopters for the Summary Care Record. We discussed the implementation process and the progress made with Trust staff, local GPs, and a patient representative.

Meetings with Local Service Providers

15 We met senior staff from the three Local Service Providers to the Programme – BT in London, Fujitsu in the South, and CSC in the North, Midlands and East. To develop our understanding of data security issues, we also visited one of BT's data centres which holds patient data including Detailed Care Records.

16 We also met Accenture, previously the Local Service Provider in the North East and the East, to discuss the novation of its contracts to CSC and its experience of the Programme.

The areas we covered with Local Service Providers

- The Local Service Provider's objectives and strategy.
- Relations with NHS Connecting for Health.
- The 'Local Ownership Programme' and relations with the local NHS.
- Progress in developing and deploying the care records systems, and plans for future deployments.
- Lessons for future deployments.
- Data security.
- Performance of the systems.

Consultation with external bodies

17 We sought views on the Programme from key representative bodies in the health sector and the IT industry. Responses were received from: the British Medical Association, the NHS Confederation, the Royal College of Ophthalmologists, the Royal College of Pathologists, the Royal College of Physicians, the Royal College of Nursing, the British Computer Society and Intellect (the trade association for the UK technology industry).

The areas we consulted external bodies about

- Actions needed for successful delivery of the Programme and the main risks to delivery.
- Governance arrangements, including the 'Local Ownership Programme'.
- The Programme's arrangements for engaging with professional and representative bodies.
- Communications about the Programme.
- Expected benefits and the main obstacles to realising the benefits.

Expert input

18 As part of the National Audit Office's quality assurance arrangements, our draft report was examined by reviewers from the Massachusetts Institute of Technology, who provided an independent, non-UK perspective.

19 During the course of our work, we had discussions with auditors from the Audit Commission in connection with their role as the appointed external auditors to local health bodies, and they also provided comments on our draft report.

20 Within the National Audit Office, we drew on the expertise of our Project Delivery Practice Network and other audit teams with experience of reviewing major IT or change programmes.

APPENDIX TWO

Information governance and security

1 The NHS has a history, underpinned by the professionalism of the vast majority of health care workers, of taking patient confidentiality seriously. The principles of information security require that all reasonable care is taken to prevent inappropriate access, modification or manipulation of data. Local NHS organisations are responsible for determining which of their staff may access Detailed Care Records, and for establishing working practices that effectively deliver the confidentiality required ethically, and by law. The NHS Confidentiality Code of Practice, published in November 2003, provides guidance on required practice for those who work within or under contract to NHS organisations about the safeguarding of confidentiality, and patients' consent to the use of their health records.

2 In relation to the Programme there are two broad areas requiring information governance and security:

- NHS and commercial organisations that require a connection to the N3 network and need, therefore, to comply (and continuously comply) with information governance standards and procedures relating to N3; and
- suppliers to the Programme who must comply with established security policy requirements relating to the aspects of the Programme for which they are responsible.

Information governance and security requirements for connecting to the N3 network

3 NHS bodies and commercial organisations, such as pharmacies, can gain a connection to the N3 network. Organisations with a connection are responsible for providing secure local networks to prevent unauthorised people from accessing confidential information.

4 Before any organisation can get an N3 connection, it must undertake a self-assessment using NHS Connecting for Health's Information Governance Toolkit, and provide a letter of sponsorship giving a valid business reason for needing an N3 connection and a completed Statement of Compliance to NHS Connecting for Health. NHS Connecting for Health assesses these documents, as well as the applicant's network architecture, before approving BT to make an N3 connection relevant to the applicant – for example, a pharmacy will gain access only to send and receive messages and data related to prescriptions. NHS Connecting for Health takes steps to help applicants improve their information governance where they do not meet the required standards. Re-assessments are made annually, and NHS Connecting for Health audits ongoing compliance of all organisations connected to the N3 network.

5 Each organisation connected to N3 must nominate one or more people for the role of 'Registration Authority', who are authorised to provide individuals in the organisation with a Smartcard. Applicants for a Smartcard must have a sponsor and provide, in a face-to-face meeting with the Registration Authority, three items which identify them in accordance with the requirements set out in the Cabinet Office standard e-Government inter-operability framework level 3. The amount of information that a holder of a Smartcard can access depends on their role, with each card holder assigned a role profile that permits them to use only those system functions relevant to their role. The Registration Authority is responsible for taking the Smartcard back when staff leave their employment, and once this action has been registered, the card can no longer be used.

6 The Summary Care Record, available via N3, is accessible to anyone who is involved in the patient's care with the appropriate Smartcard access. The card holder must log on to the system with their card and passcode. To access a particular record, they must have their membership of a team involved in a patient's care (i.e. their 'legitimate relationship' with the patient) confirmed by a check against central records, or have special authorisation to satisfy statutory requirements or other exceptional reasons for accessing the record. System audit trails will enable organisations to monitor access. Smartcard holders are told that access to Summary Care Records is audited, and that it is a disciplinary offence to misuse it.

7 NHSmail, also available via N3, is encrypted, although some clinicians have continued to use other un-encrypted e-mail systems to exchange patient data. NHS organisations do not have to take NHSmail and, though take-up has been slow, NHS Connecting for Health expects all remaining NHS organisations to switch to NHSmail once the transition to Microsoft Exchange 2007 has been completed.

Information governance and security requirements of suppliers to the Programme

8 The systems and services provided by suppliers are required to be secure from penetration. The supplier is responsible for the security of the network and is required at all times to provide a level of security which:

- is in accordance with good industry practice and emerging good industry practice;
- meets any specific security threats to the network, the network services and the sites where network equipment is housed;
- meets any specific threats to any services; and
- complies with the relevant international and British Standards ISO/IEC17799:2000 and BS7799-2:2002.

9 The supplier is required to have a network security policy, approved by NHS Connecting for Health and reviewed at least annually, which sets out the security measures to be implemented and maintained by the supplier that are sufficient to ensure that the network, network services and any subsequent changes comply with:

- the provisions of the supplier's contract;
- NHS Connecting for Health's requirements relating to security;
- ISO/IEC17799:2000 and BS7799-2:2002;
- appropriate ITSEC standards for technical countermeasures included in the network;
- National Encryption Standards; and
- NHS information security policy.

10 The supplier is required to conduct tests of the network security policy. NHS Connecting for Health can witness the tests, receives the reports of the testing, and can also, at any time and without informing the supplier, carry out security tests, including penetration testing, to test the supplier's compliance with, and implementation of, the network security policy. Where such tests reveal any actual or potential security failure or weakness, the supplier would be required to update the network security policy.

Security around downloading of data from the Spine via the N3 network

11 As the supplier of N3 and the Spine, BT is responsible for security around downloading of data from the Spine via N3 and subsequent transit of the data. BT described the following controls:

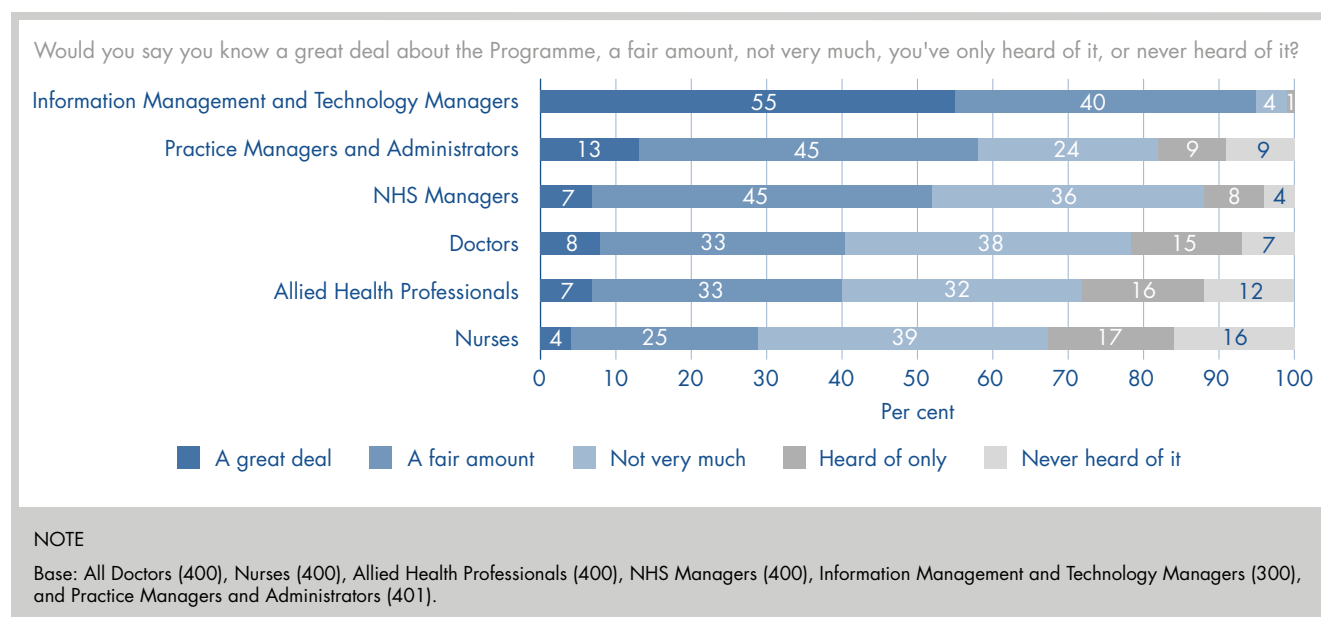
- all downloaded data is required to be encrypted with a 256k key. Using current technical knowledge and technology, it would take around 100 years to break the encryption without the key;
- the person cleared to download patient data onto disk has no knowledge of or contact with the key;
- the disk is physically taken to the requestor by courier, where one of two identified recipients must sign to confirm that the disk has been received. The recipients may only then request that the key is dispatched; and
- if BT were not to receive a request for the key within three days, it would start search procedures.

APPENDIX THREE

Key findings from the most recent survey of clinicians and other NHS staff

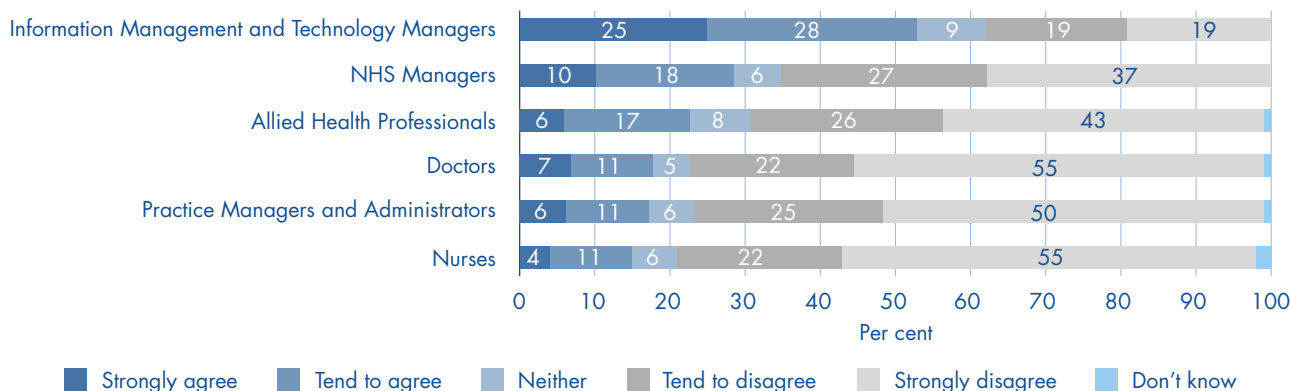
The Department has commissioned Ipsos MORI to carry out a series of surveys to track awareness and understanding of the Programme among clinicians and other NHS staff. The most recent survey, the third, was conducted during April and May 2007 via 2,301 telephone interviews with staff from six groups. Some of the key findings are shown in the graphs below.

Familiarity with the Programme

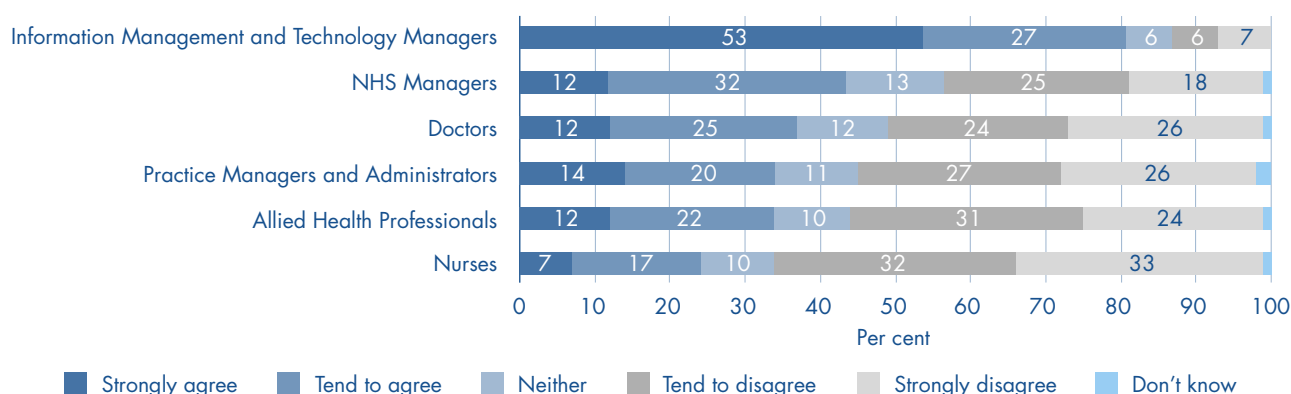


Engagement with the Programme

To what extent do you agree or disagree with the following statement about changes and systems implemented as part of the Programme: I have had an opportunity to shape decisions about the new IT systems.



To what extent do you agree or disagree with the following statement about changes and systems implemented as part of the Programme: I have a lot to contribute to the planning of the IT changes.

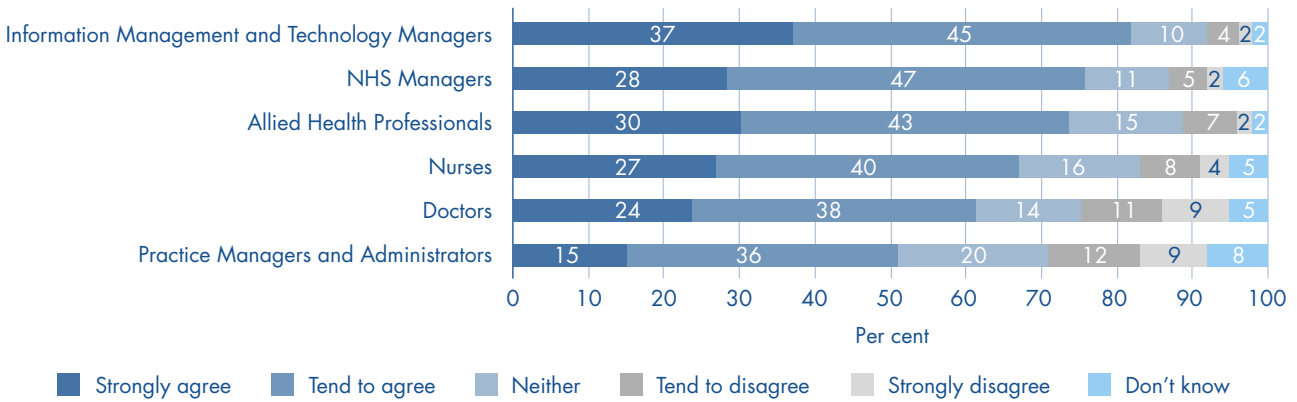


NOTE

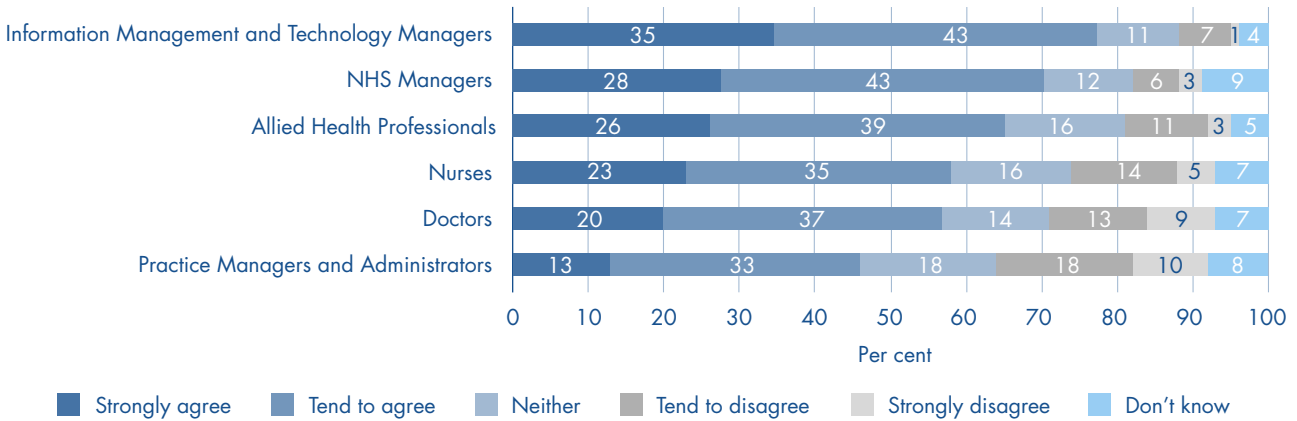
Base: All Doctors (400), Nurses (400), Allied Health Professionals (400), NHS Managers (400), Information Management and Technology Managers (300), and Practice Managers and Administrators (401).

Benefits of the Programme – impact on patient care and safety

To what extent do you agree or disagree that the new IT systems will improve patient care?



To what extent do you agree or disagree that the new IT systems will improve patient safety?

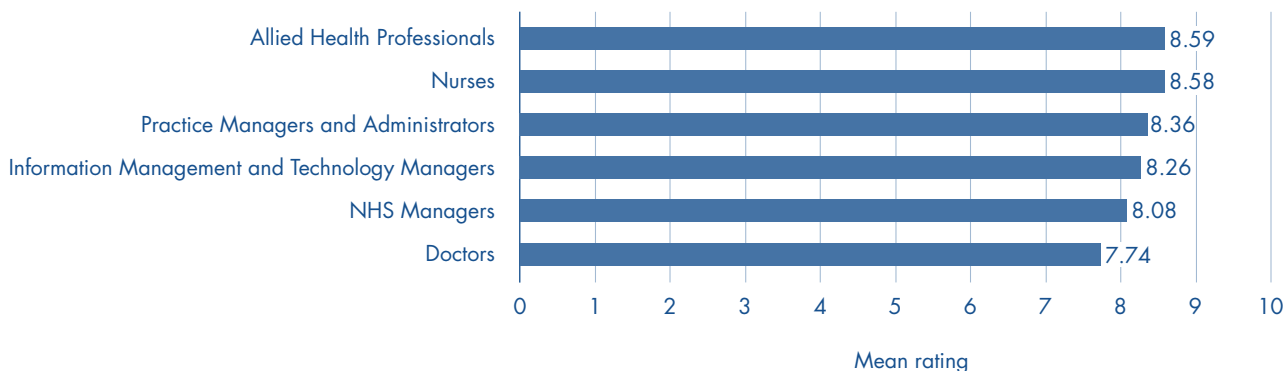


NOTE

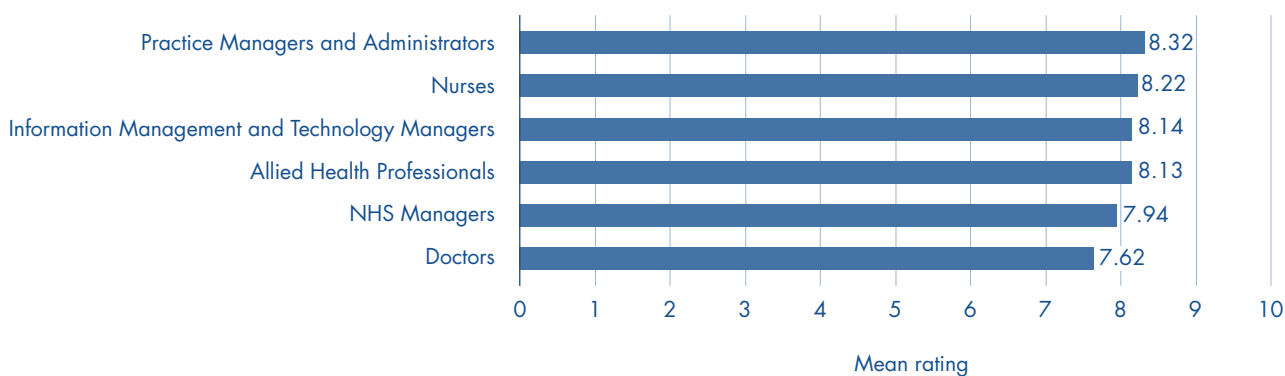
Base: all who have heard of at least one service: Doctors (397), Nurses (390), Allied Health Professionals (392), NHS Managers (399), Information Management and Technology Managers (300), Practice Managers and Administrators (394).

Benefits of the Programme – ranking in terms of importance

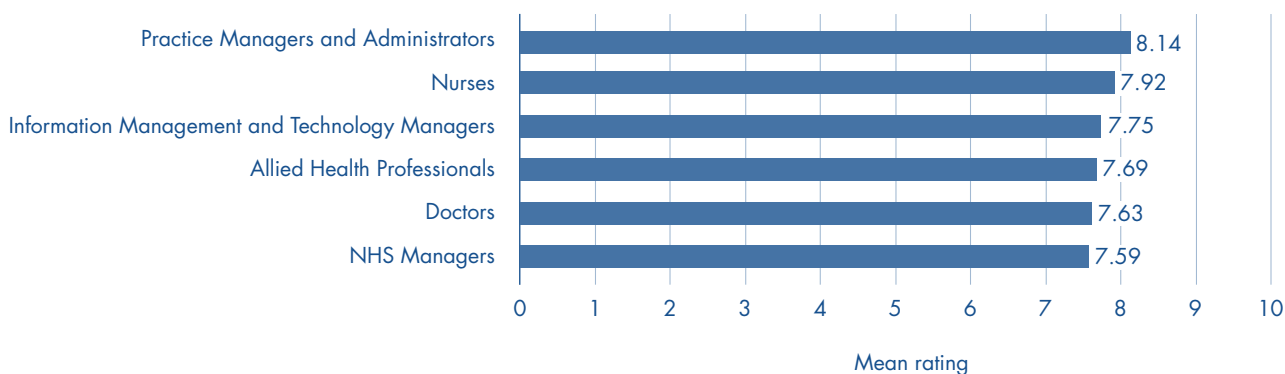
For each example of benefits, tell me how important it is to you personally, where 10 means absolutely vital and 1 is of no importance at all: NHS staff will have access to patient information when they need it.



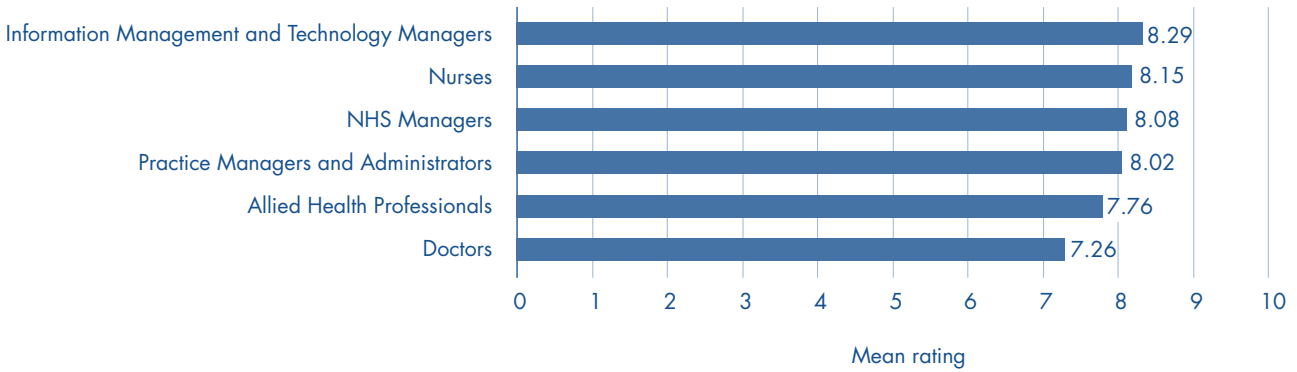
For each example of benefits, tell me how important it is to you personally, where 10 means absolutely vital and 1 is of no importance at all: good access to information about patients will make diagnosis easier.



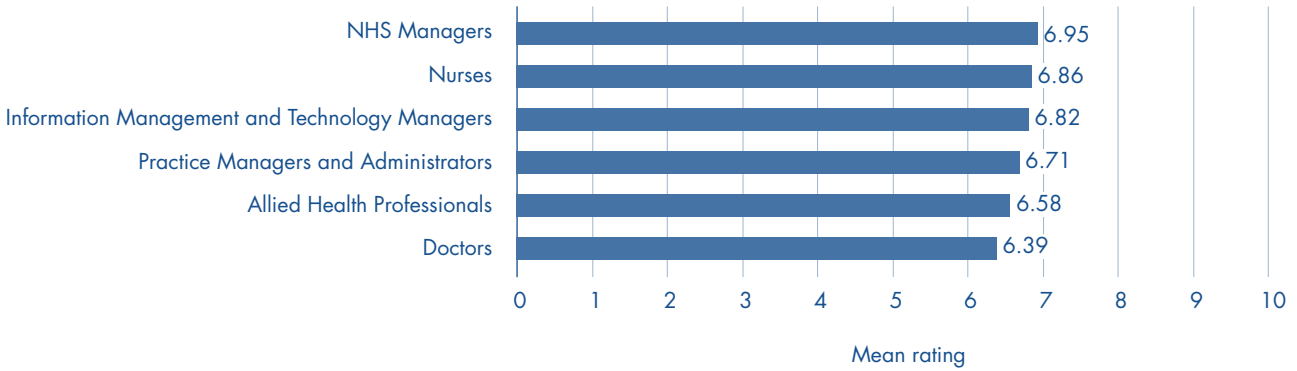
For each example of benefits, tell me how important it is to you personally, where 10 means absolutely vital and 1 is of no importance at all: sharing X-rays electronically will speed up diagnosis.



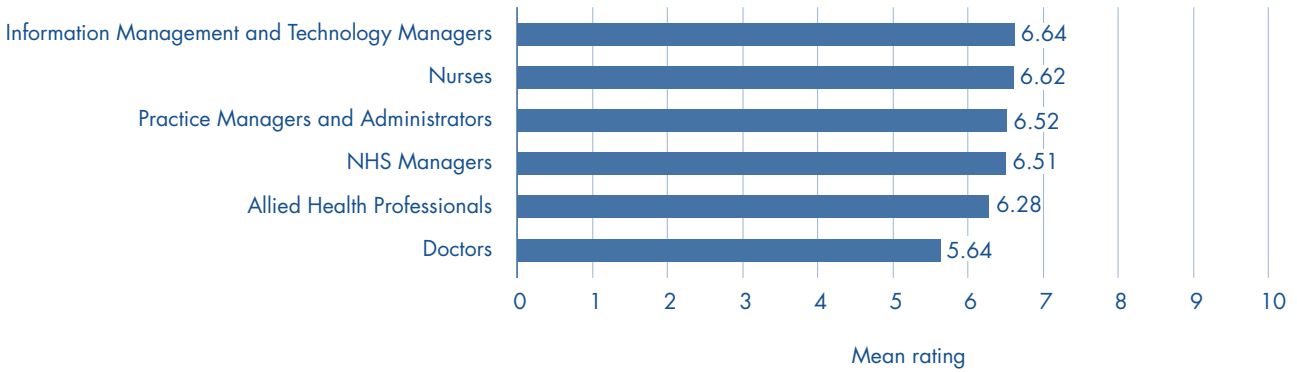
For each example of benefits, tell me how important it is to you personally, where 10 means absolutely vital and 1 is of no importance at all: fewer mistakes will be made when dispensing medication using clearly legible prescriptions.



For each example of benefits, tell me how important it is to you personally, where 10 means absolutely vital and 1 is of no importance at all: NHS money will be saved by storing and accessing X-rays electronically.



For each example of benefits, tell me how important it is to you personally, where 10 means absolutely vital and 1 is of no importance at all: there will be fewer missed hospital appointment times.



NOTE

Base: All Doctors (400), Nurses (400), Allied Health Professionals (400), NHS Managers (400), Information Management and Technology Managers (300), and Practice Managers and Administrators (301).

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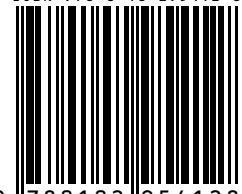
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