

Implementing the NHS information technology programme: qualitative study of progress in acute trusts

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ABSTRACT

Objectives To describe progress and perceived challenges in implementing the NHS information and technology (IT) programme in England.

Design Case studies and in-depth interviews, with themes identified using a framework developed from grounded theory. We interviewed personnel who had been interviewed 18 months earlier, or new personnel in the same posts.

Setting Four NHS acute hospital trusts in England.

Participants Senior trust managers and clinicians, including chief executives, directors of IT, medical directors, and directors of nursing.

Results Interviewees unreservedly supported the goals of the programme but had several serious concerns. As before, implementation is hampered by local financial deficits, delays in implementing patient administration systems that are compliant with the programme, and poor communication between Connecting for Health (the agency responsible for the programme) and local managers. New issues were raised. Local managers cannot prioritise implementing the programme because of competing financial priorities and uncertainties about the programme. They perceive a growing risk to patients' safety associated with delays and a loss of integration of components of the programme, and are discontented with Choose and Book (electronic booking for referrals from primary care).

Conclusions We recommend that the programme sets realistic timetables for individual trusts and advises managers about interim IT systems they have to purchase because of delays outside their control. Advice needs to be mindful of the need for trusts to ensure longer term compatibility with the programme and value for money. Trusts need assistance in prioritising modernisation of IT—for example, including implementation of the programme in the performance management framework. Even with Connecting for Health adopting a different approach of setting central standards with local implementation, these issues will still need to be addressed. Lessons learnt in the NHS have wider relevance as healthcare systems, such as in France and Australia, look to realise the potential of large scale IT modernisation.

INTRODUCTION

The NHS information and technology (IT) programme is the largest civilian IT programme in the world. Connecting for Health is the agency responsible for delivering the programme. The main national features of the programme are a new networking service providing broadband, called "N3"; electronic

booking, called Choose and Book; electronic transfer of prescriptions; and a nationally accessible summary of patients' records, called "the spine" (see bmj.com). With projected expenditure of over £12bn,¹ and in the face of professional concerns about maintaining patients' confidentiality,² government ministers have accepted that elements such as the electronic record will be piloted rather than implemented across the board.³ In June 2006, the National Audit Office reported that the programme was facing important challenges in delivering systems to agreed timescales, ensuring involvement of NHS organisations in implementation, and gaining the support of NHS staff and the public.⁴

Since October 2003 we have been studying in detail the processes and outcomes of implementing the NHS IT programme in four acute hospital trusts in England.⁵ In August 2005 we reported findings from each trust's baseline assessment and information gathered from the first round of interviews.⁶ In this second phase, we re-interviewed the same senior trust staff or interviewed new personnel in the same posts, to revisit the issues previously raised, to describe how they may have changed, and to identify new issues that may have emerged.

METHODS

We met with key IT, finance, and clinical directorate staff, reviewed documents, and used routinely published data to collect baseline information. We also collected data from interviews with 25 senior NHS managers and clinicians in four acute trusts. To enhance generalisability, we selected four trusts that reflected a range of characteristics (see bmj.com). At each trust participants included the chief executive, director of information management and technology, medical director, and director of nursing, all of whom have responsibility for both fiscal and clinical probity.

In the 18 months since our first study, there have been several changes in personnel; of the 23 staff originally interviewed in 2004, only 11 were still in post in 2006. We analysed the views of the 11 staff interviewed in the early study separately from the views of the 14 staff interviewed only in this second phase to determine whether the views of the two groups of staff were substantially different.

An experienced qualitative researcher conducted semistructured interviews on a one to one basis at each trust. Topics discussed included the processes and outcomes of implementing electronic health

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systems and the impact of Connecting for Health policies and communications. Interviews were taped and transcribed (quotes presented here have been edited, see bmj.com for verbatim quotes).

We analysed the data in three stages based on grounded theory principles of coding and theme abstraction.⁷ Using the comparative case studies we explored this complexity by examining variations within and between the trusts, taking account of organisational changes relating to NHS policy and communications. Two authors (JH and NF) independently read the interview transcripts and agreed key themes.

RESULTS

We identified eight themes, three of which reflected previous concerns (financial deficits, poor communication, and continuing delay). All themes are representative of all 25 staff interviewed. The issues raised were similar among staff interviewed in both phases of the research and those staff interviewed only in the second phase.

Increased support for the goals of the programme

Since the first round of interviews, we found that support for the concept underlying the programme had grown. The overriding view was that the NHS urgently needs the benefits that can be gained from IT modernisation implemented in a standardised way. We found little resistance to IT modernisation, with interviewees reporting that staff are ready, and sometimes “desperate,” for progress. Alongside this growing support, however, we also found concern about the ability of programme managers to deliver the programme. To maintain momentum, interviewees said that Connecting for Health needed to deliver products that work soon. They also emphasised the need for independent evaluation to measure the benefits and costs.

Continuing impact of financial deficits

In our earlier interviews, senior staff in trusts facing financial difficulties were concerned about how to pay for the implementation costs associated with IT

modernisation. Currently, financial difficulties within the NHS are even more widespread,⁸ and this issue has become more important. Respondents reported that making savings is now more critical and that applications that are part of the programme are not the bargain they were expected to be. Implementation of picture archive and communication systems (PACS) is also causing disquiet. Some respondents reported that such applications supplied through the programme seem to be more expensive than market alternatives, but a central Connecting for Health mandate has left them with no choice but to implement the more expensive option: “A lot of the things are being sold to us at a much higher price than we would have been able to get if we’d been in a real market situation, so the total costs to the NHS have been very high indeed” (medical director, trust 4).

Managers distracted from implementing the programme by other priorities

Financial deficits not only cause concern about how to pay for implementation of the programme but also act as distractions for managers. In the earlier interviews, some trust staff reported that recent mergers and the need to prioritise attainment of performance ratings made it difficult to prepare for the programme. Eighteen months later, the priority of trust finances dominated. Two of our four trusts have had “turnaround teams” in place (external consultants brought in to help trusts resolve financial crises). One trust also has the Department of Health’s performance support team working with it. The dominant and immediate need to eliminate any overspend, while maintaining performance, seems to leave managers little time to commit to implementing the programme or any other new services or products (box 1). The programme was reported to be a pressing priority only in trusts where managers perceived a considerable risk to patients’ safety from having to maintain existing legacy systems while waiting for new systems to arrive.

Poor communication between Connecting for Health and local managers

Previously, interviewees in all four trusts were concerned with a lack of clarity from Connecting for Health about the timetable for implementation. Eighteen months later, although respondents were enthusiastic about the goals of the programme, the perception of poor communication was unchanged. There is still uncertainty about the timetable for delivery of key components of the programme and about the extent of financial assistance for “required” components. Respondents reported that much of the decision making has been between Connecting for Health and the local IT service provider. This lack of local involvement seems to have increased feelings of disempowerment and frustration: “The frustration is we’re not the customers, as far as the suppliers are concerned . . . CfH

Box 1 | Managers distracted from implementing the NHS IT programme by other priorities

“Actually motivating people in this particular trust at this particular time to have the vision to get involved in a nationwide project, which isn’t delivery, is virtually impossible. The majority of my colleagues are surviving day to day with no beds, cuts . . . There are real immediate issues, there isn’t luxury, I suppose, of people having the time and the intellectual capacity to pursue a 10 year vision. We’re trying to survive”—*medical director, trust 2*

“I would like to see good IT systems within the NHS . . . where I’m coming from in a trust that’s got the performance support team in and we’ve got the turnaround team in, we are trying to pull out a great deal of expenditure, about 10% of our budget . . . it does feel a little unreal trying to implement a large IT system on top of that . . . there are no real plans yet because we haven’t got that far. And, to be honest, the whole other agenda [making savings] is just taking my time up”—*director of nursing, trust 1*

Box 2 | Continued delays and re-planning

"The dates keep getting re-planned because we're not allowed to say delayed anymore. We joke in this trust that the NHS IT programme is never closer than two years away and just when you think it's actually going to be closer it suddenly goes again and it's two years away again"—*systems training manager, trust 3*

"I see all the sort of stuff, the propaganda that comes out from CfH and they're always saying how a lot of these things are actually on time, despite what the press says . . . hundreds of people are using the new systems and . . . there's not an awful lot of evidence of that across the country, I don't think"—*clinician lead for Connecting for Health, trust 2*

pull the strings, it's their contract, we're just the entity that takes the solution" (director of information management and technology, trust 2).

The uncertainty has also resulted in some trusts adopting policies that actively discourage staff from engaging with the programme: "I think the biggest problem we've had, as an organisation, is you have to have a product to sell to the clinical staff to get them enthused, to get them to use it, and the biggest problem we've had is that the product has not revealed itself to us yet" (medical director, trust 3).

Continuing delay in replacing patient administration systems (PAS)

In the first interviews, respondents were concerned about when their patient administration systems (PAS) would be replaced. Originally, the national programme planned for this system to be installed before any clinical applications. Because of delays in developing a PAS that can achieve connectivity with the "spine" (a nationally accessible summary of patients' records)⁹ this plan has had to be revised and interim off the shelf applications are now being offered. The revised plan has slowed progress, and trusts are still unsure when their replacement PAS will be implemented. Interim applications will allow trusts to move forward to some extent but will not achieve the promised wider connectivity with other NHS hospital trusts and primary care teams (box 2).

Growing risk to patients' safety associated with delays

Before the programme was conceived, NHS hospitals bought their own IT systems. When first interviewed, senior clinicians were worried that the replacement of these systems (often carefully customised to meet local needs) might result in a loss of functionality. This concern, though still evident in our recent interviews, has been largely superseded by the urgent need to replace legacy systems. When details of the programme were announced in late 2002, many trusts stopped investing in upgrading their existing IT systems, choosing instead to spend money on other priorities while

waiting for the supply of applications compliant with the programme systems. Delays mean that trusts in our study are still waiting for new systems. Where replacement systems were needed in 2002, the delay is now perceived to represent an unacceptable risk to patients' safety, with trusts considering buying interim systems outside the programme (box 3).

Loss of integration of components of the programme

The original goal of access to information across the NHS that underpinned the IT programme seems to have been lost.¹⁰ The lack of integration offered by interim applications has left senior trust staff questioning whether NHS-wide connectivity will ever be achieved and why trusts have had to wait several years for the new systems. The purchase of interim applications does not seem far removed from how the NHS acquired IT before the programme, with the problems of this approach seemingly perpetuated, such as databases that cannot be accessed from outside the trust (box 4). Managers also questioned how the government vision of decentralising clinical services, by increasing provision in the private sector, aligns with a centralised approach to information sharing (box 4).

Discontent with Choose and Book

Since the first round of interviews, acute trusts and local primary care teams have proceeded with implementation of Choose and Book, a system that allows general practitioners to make patients' appointments and referrals into acute trusts electronically. We found little support for the patients' choice element of Choose and Book (patients being able to choose to be referred to one of a range of hospitals) among the staff we interviewed (box 5). The technical problems affecting electronic booking have also undermined confidence in other planned applications. None of the managers or clinicians we interviewed was optimistic about the ability of Connecting for Health to deliver the systems. The doubts expressed were twofold:

Box 3 | Concern over growing risk to patients' safety; some trusts may go it alone

"Our path system is extremely out of date, it's not just obsolescent, it's obsolete. When we had to buy some new bits for it recently we had to buy them through eBay from someone in America because there's just no bits in this country, so it's a huge risk to the trust that we're still carrying this path system"—*medical director, trust 4*

"And there are a number of risks that are associated with our old system, some very serious risks and risks in development and progress within the organisation and between the organisations due to this lack of putting a good idea into practice"—*divisional manager for diagnostic therapies and outpatients, trust 4*

"It could die tomorrow, it's such an old system and then we are really stuffed, basically"—*director of nursing, trust 2*

Box 4 | Loss of integration of components of the NHS IT programme

"We've got foundation trusts, we've got, perhaps more importantly, the mixed economy so are we saying that a condition of a private provider receiving NHS work is that they have to be signed up to the national programme? . . . We're not going to have a national solution that actually is fit for purpose in a mixed economy and providers"—*chief executive, trust 2*

"I genuinely am not sure whether the solutions are solutions to yesterday's analysis rather than today's analysis . . . I think what's happened over the last few years is we have moved from NHS plc to health care, as an industry, which has lots of different players in it"—*chief executive, trust 3*

whether it was technically possible and whether the products would be delivered in a reasonable time frame. Participants expressed feelings of frustration at the slow progress.

DISCUSSION**Key findings**

Over three years from inception, and despite several setbacks and some hostile media coverage,¹¹ the government's NHS IT programme remains an objective that many NHS staff support. In line with the National Audit Office report⁴ all of our interviewees were enthusiastic about the goals of the programme.

Set against this support were concerns about a lack of clarity and progress. Senior managers need to make financial savings and achieve efficiencies. Although modernisation of IT should facilitate these goals, continuing uncertainty makes key managerial decisions more rather than less difficult. It is not clear how much more implementation and additional "required components" will cost trusts, nor what cost savings might be expected after implementation.¹² Trusts have also not received guidance on how to maximise possible savings by, for example, redesigning local work practices.⁴

It has been difficult for trusts to prioritise the programme and engage staff when implementation timetables keep shifting. In the meantime, trusts have used a "patch and mend" approach to maintain existing systems. Major concerns over the risk to patients' safety by continuing this approach have been expressed and reported elsewhere.¹³ Trusts are attempting to mitigate the risk by opting for interim systems, although delivery of these interim systems is also delayed.¹⁴ Purchasing interim systems outside the programme is also likely to be inefficient if trusts subsequently have to buy new systems compliant with the programme during the lifetime of the interim system.

The programme in wider context

Although the diversity of healthcare provision in other countries means projects on the huge scale of the

national programme for information technology are unlikely, the widespread implementation of electronic healthcare records is progressing elsewhere. France has a national electronic medical patients' record system planned for introduction in 2007, combining all consultations and procedures, treatments, drugs, and medical devices prescribed. Similarly, Australia is trialling a new national management system for electronic patients' medical records, called HealthConnect.¹⁵ Creation of the Office of the National Coordinator for Health Information Technology in the United States also indicates a strong commitment from the current US administration to this task.¹⁶

For these countries, an important lesson to emerge from our study is the difficulty in achieving an appropriate balance of responsibility between government and local healthcare organisations. Devolving control of IT to local managers can result in a lack of standards and disparate functionality. Central control is equally problematic. The national programme covers the entire NHS in England. The sheer size of the task has made progress slow. Effective communication and a shared commitment to the task across all health sectors have been difficult.

Implementation of Choose and Book illustrates these difficulties. There was no integration of IT systems in trusts and general practices and acute trust staff were unable to reconcile timetables for implementation and goals for Choose and Book with their primary care colleagues. Although general practitioners derive substantial benefits from using IT systems for the day to day running of their practices, these systems have been specifically designed to meet their business needs. The systems underpin relatively simple clinical functions,¹⁷ but effectively allow general practitioners to run their practices. They may perceive that they have little to gain from this programme and, importantly, can choose not to have applications of the programme imposed on them.¹⁸

By contrast, acute hospital trusts have to deal with more urgent and complex demands, requiring fast

Box 5 | Discontent with Choose and Book and loss of confidence in the programme

"I've not really talked to the clinicians about whether they think it's a good idea or not [Care Records Service]. They certainly think Choose and Book is a crap idea, they hate it"—*director of performance and improvement of information, trust 1*

"Somebody, not here but at the PCT level, is trying to increase that all the time [usage by general practitioners] . . . I know that some GPs absolutely hate it and I get the impression that they're using it under duress and that the slightest fault is a case of 'Well, what a rubbish system, would never work anyway'"—*chief executive, trust 4*

WHAT IS ALREADY KNOWN ON THIS TOPIC

Concerns have been raised in the national media and elsewhere about the implementation of the NHS IT programme

Last year's National Audit Office report stated that, while the NHS IT programme has made substantial progress, challenges lie ahead, including delivering systems within agreed timetables, ensuring that NHS organisations fully play their part, and winning the support of NHS staff

WHAT THIS STUDY ADDS

Senior trust managers and clinicians reported concerns about a growing risk to patients' safety from continuing delays in delivering new IT systems; the cost of interim applications and whether they represent value for money; uncertainty over delivery timetables; and achieving integrated IT systems, as the NHS IT programme original envisaged

Several of these concerns had actually been first expressed over two years ago

Acute hospital trusts cannot prioritise the implementation of the NHS IT programme because of these uncertainties and their need to achieve stringent financial targets

communication between hundreds of people across many specialties and professional disciplines, yet the IT systems to support this activity are poor. Acute hospitals stand to benefit hugely from modernisation, not least in achieving the efficiencies currently demanded of them. For managers and clinicians in acute trusts, the programme is desperately needed and has to work. Independent procurement of IT systems, in the absence of national standards, has already been tried with little success.¹⁹

These difficulties have led to a third, middle way, being tried: setting central standards but with local implementation. As recommended by the British Computer Society,²⁰ the role Connecting for Health is now shifting away from implementation towards providing a national infrastructure and setting standards. Implementation will now be devolved more locally, as set out in the NHS national business plan for 2007-8.²¹ Even with these changes, the issues raised in our study, particularly with regard to risks to patients' safety, still need to be urgently addressed.

Strengths and limitations of the study

The small number of participating trusts makes us cautious about generalising our findings. Concerns raised by respondents about performance and finance are prevalent issues in the NHS but may be more salient in our participating trusts than nationally. We found no substantive differences in views among staff interviewed in the earlier phase of the study and those interviewed later. Staff interviewed were all senior NHS personnel. The 14 recent employees would probably have been recruited from similar NHS posts

elsewhere, suggesting wider generalisability. Another limitation of our study is the lack of a primary care perspective, which we have discussed above.

Set against these limitations, ours is the only in-depth, longitudinal study of modernisation of IT within the NHS. We interviewed a cross section of senior trust staff responsible for implementing the programme in NHS hospitals over a period of two years.

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