Perpetuating Health Care Policy with the Implementation of an Information System

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Perpetuating Health Care Policy with the Implementation of an Information System

Abstract

The UK has a universal health care system. The National Health Service (NHS) is the second largest organization in the world (1.3 million staff), behind the Chinese Army and the Indian Railway, with an annual expenditure of over £90 billion ($126 billion). The health care system has moved from the centralized allocation, of limited budgets, to providing patients with the choice of family doctor, hospital and specialist. In 2002, a project was started to provide the mechanism to provide patient choice, supported by the central storage of medical records. The project is the largest civil information system project in the world (£14.4 billion, $20 billion) and is running significantly late and over budget. There is not an obvious financial justification for the project. Despite its difficulties the project is still being funded by central government. The paper proposes that the key benefit, of the information system, will be to perpetuate, as well as implement, the present government's health policy.

Keywords

Health care policy, Health care information systems, NPfIT,
1. Introduction

The National Health Service (NHS), in the UK, is the third largest organization in the world, with 1.3 million employees, and only behind the Chinese Army and the Indian railway (Lister, 2004). Healthcare in the UK is paid for by general taxation and is free at the point of consumption. Since the devolution of power to the different regions within the UK (Wales, Scotland, Northern Ireland, and England), a range of models have been adopted to manage the health care systems. Scotland, Northern Ireland and Wales have retained a collaborative approach, which is suited to the ad hoc nature of health care that is difficult to define (Berg 1998). In England, policy has moved towards introducing patient choice and competition, to improve the efficiency of the health care system (Triggle 2008). The Labour government has denied that it is attempting to implement a market based health service. In December 2005, Patricia Hewitt, the Health Secretary said:

"It would be a pretty odd kind of market where the user cannot pay and the providers cannot compete on price." (Triggle 2006)

Even before Patricia Hewitt’s statement, competition had been introduced between the hospitals. Family doctors were provided with budgets and can choose the most suitable hospital and specialist for their patients (DH 2004; BBC 2006). The competition is being moved to the level as patients are being provided the option to choose the hospital, specialist and book an appointment. A higher level of competition is achieved as the patient may base their decision on the perceived quality of care, convenience and accessibility. To be able to make a real choice the patient would need performance measures of the specialists and check if they have any appointments available.

Competition based on cost is being introduced as the provision of care is extended beyond the NHS to include the private sector, voluntary organizations and other providers in the EU. As most of the costs of a hospital are fixed, their allocation can be highly subjective. There is an incentive for the current provider to understate their fixed costs to keep their patients (Jones and Lakasing 2007). An appeals process was introduced to rule on disputes (Carvel 2009), but can only be effective with access to accurate measures of costs and performance. The volume of business passed to other health care providers is also limited by the capacity of the appeals process. There is an attraction to using measures that are accessible and where comparison is straightforward. The British Medical Association (BMA) objected to the early focus on waiting times, which only related to 10% of NHS spending (Coombes 2004). To be effective the process needs to provide credible and comparable performance measures across the NHS.

As a hospital’s revenue is increasingly determined by patient choice, in 2008, Foundation Hospitals were given the option to advertise their services directly to potential patients. Since Patricia Hewitt’s statement hospitals are competing on cost and the patients can increasingly choose their supplier. There is a proposal to move control of the health care budget to the patients with chronic conditions (Carvel 2009).

The developments listed could not be administered using a paper-based system. Tony Blair initiated an NHS National Project for IT (NPfIT), in 2002, to provide a centralized information system for the NHS in
England, to be delivered by 2005. Mr Hutton, the Secretary for Health, outlined the objective of the NPfIT:

"The national program for information technology (NPfIT) will procure, develop and implement modern, integrated IT infrastructure and systems for all National Health Service organizations in England by 2010. There are four key elements: electronic appointment booking, an integrated care records service, electronic prescribing and an underpinning IT infrastructure with sufficient connectivity and broadband capacity to support the critical national applications and local systems. The NPfIT will improve patient care by increasing the efficiency and effectiveness of clinicians and other NHS staff" (HC 19 Oct 2004: C 666W).

The ability to centrally hold and make accessible patient records is a laudable objective. The access to the records could provide a valuable resource to the medical professional determining how to treat the patient. The NPfIT has been in difficulty almost from the point it was conceived. The budget for the project increased from £2.3bn, with an expected date of implementation of 2005, to £14.4 billion to be implemented by the end of 2014 (HC 26th March 2007 and HC 27th Jan 2009). The press, TV channels and questions and reports in the Houses of Parliament have reported specific issues (changing requirements, delays, increase in cost, overly aggressive and poorly defined supplier contracts and poor feedback from the users). The paper uses two basic framework to evaluate the success of the project (Block 1983) and whether it is failing (Sauer 1993).

There is not an intention to provide recommendations concerning how the NPfIT could resolve its problems. University College London has already produced an extensive assessment (Greenhalgh et al 2008). The focus of the paper is on the role of government policy in defining the requirements for the project and its influence on provision of funding. The primary sources for the paper are documents from the House of Commons and House of Lords. While press articles are used, it was recognized that they might focus on the negative aspects of the project, which are more newsworthy. The reliability of the press articles is supported by the documents from the Houses of Parliament. The consistent message from almost all of the sources is that NPfIT is in severe difficulty.

2. Public Sector Implementations of centralized information systems.

It is not immediately clear why the NPfIT project is focused on implementing a highly standardized system, controlled from the centre. There are parallels with well-documented cases, outlining the development of centralized information systems in the public sector. The specialist employees required the support of
employees that had specific requirements and the power to reject the system. The police information system project, in the UK, was centralized with the budget controlled by the Home Office rather than local police forces. The local forces did not believe they were accountable for the system and refused to finance its implementation (Collins, 2005; Berg 1998). The initial failure of the information system of the London Ambulance Service illustrated the requirement to actively involve the users in the definition of the requirements and staging the implementation of the functionality (Beynon-Davies, 1995). Continuous input is required from clinicians to develop a system that meets their requirements (Ginneken 2002). An early health care IS project, in Australia, provided an example of the issues resulting from a mismatch between a divisional structure, of specialist units, with the implementation of a centralized information system (Southon et al 1997). Similar to the NHS, the administrative functionality, which improved established processes, across the organization, was implemented reasonably successfully. Serious problems were encountered implementing the patient administration system when the specialist groups insisted the system was tailored to meet their needs and it was eventually abandoned.

Initially the paper will review whether the project can be viewed as a success. A basic structure is provided by Block's (1983) definition of a success as on time, within budget, meets its specified requirements and satisfies its users.

3. Evaluating the success of the project

It is difficult to assess the success of an information system that is still in progress. Delays could be due to a significant increase in the functionality required by the user, disagreement concerning the prioritization of system changes and reluctance of the users to adopt the system. Block (1983) provided a definition for a successful information system project as; on time, within budget, meets its goals and specified requirements and satisfies its users. The cost of the NPfIT has increased from £2.3bn ($3.2 bn), with an expected date of implementation of 2005, to £14.4 bn ($20 bn) to be implemented by the end of 2014. The other three factors are subjective and are more difficult to assess. Reports in the press and from the Commons Select Committees provide an insight. The Commons Account Committee (2007) stated the NPfIT "...has much still to do to win hearts and minds in the NHS, especially among clinicians. It needs to show that it can deliver on its promises, supply solutions that are fit for purpose, learn from its mistakes, respond constructively to feedback from users in the NHS, and win the respect of a highly skilled and independently minded workforce" (HC 20th PAC, 9th January 2009).

1. On time and within budget

In 2009 most Hospital Trusts had waited five years to implement systems to meet their own needs for the electronic storage of patient records. The significant delays with implementing the system have left hospital
trusts in the quandary of whether to update their aging systems in the interim.

Remarkably for such a large project, the NPfIT has not accounted for the project's costs within the NHS (HC390, 11th April 2007 and King 2008). The cost of implementing the system has been controlled with the use of fixed price contracts. As the contractors were only paid, once the hospitals agreed that the system was implemented, they were forced to implement systems changes, even though they were not included in their contracts. Two of the contractors withdrew from the NPfIT, in 2007, due to the losses they were making on the project. Peter Hutchinson, Fujitsu's Group Director, gave the reasons, for withdrawing from the contract renegotiation, as the conflict between Connecting for Health's requirement of a standardized system and demand from the local trusts to tailor the system. The focus of the NHfIT was for "ruthless standardization" (HC, H390 January 2009, Q20)."

The requirement to keep the contractors’ costs within agreed fixed budgets resulted in systems being implemented before they were ready. A quote from Richard Granger, the project manager for NPfIT, until June 2007, illustrates the hands off approach taken to deal with user requirements:

"Sometimes we put in stuff that I'm just ashamed of. Some of the stuff that Cerner has put in recently is appalling" (McGinn, 2007).

3. Meets its goals and specified requirement

The two key features of the NPfIT, present by the Connecting for Health (responsible for NPfIT), are the ability for medical professionals to access a patient's medical records from anywhere in the UK. Provide he capability for patients to choose their hospital and specialist and book an appointment with the help of their family doctor.

Prior to NPfIT, family doctors used a range of specialized systems to store electronic patient records and administrative tasks, related to performance and payments. Hospitals used systems primarily for administrative tasks related to recording admissions, discharges and scheduling. High-level patient data was held related to diagnostics and demographics. There was little use of computerized systems to store clinical data (HCS, 13th November 2007). The systems were not all compatible, making it difficult to transfer records between family doctors and the hospitals and clinics (HCS, 25th July 2007). Holding the records in an electronic form would speed the transfer and offer the potential for other medical staff to access them if required. An example would be to allow an anesthetist, in an accident and emergency department, to look up the patient's medication. A common centralized system could greatly simplify the process of collating the information within the records at the level of patients, doctors, or hospitals, clinics and surgeries (Berg, 1998).
Central government appears to be satisfied with the progress of the project. A briefing paper prepared for the Prime Minister, in June 2007, stated “Much of the software is complete, with software delivered to time and budget,” though, “some deployment is progressing more slowly than we would wish for and is dependent on legacy IT suppliers and NHS preparedness (Collins, 2007).” Feedback from political sponsors has been difficult to interpret. Angela Eagle MP"

“Without the [NPfIT] programme, the NHS could no longer function, and it is already providing essential services and significant benefits to tens of thousands of clinicians and millions of patients. It is therefore a success story that ought to be acknowledged. For example, more than 5.5 million appointments have now been made using the ‘choose and book’ system, representing 44 per cent of first referrals. In addition, 397 million diagnostic images are now stored centrally, and 42 million electronic prescriptions have been used in a service that is now available in 41 per cent of pharmacies and 47 per cent of family doctor surgeries.”

Phil Hurd, Director of IM&T at Northamptonshire Teaching Primary Care Trust, provides a more frank indication of the acceptance of the project (Collins, 2007). In his Primary Care Trust 87% of family doctor practices were "technically" live with a basic version of the e-prescriptions system, although 78% of family doctor practices were not using the system. The initial phase produced a bar code on a prescription that was then sent to the pharmacy. It was not expected that the electronic transfer would be ready until the end of 2009 (HC 27th January 2009 H153).

There has been very little consultation with patients. An area of particular concern is who should access a patient’s records. A patient may be comfortable that their medical records, held with their family doctor, can only be accessed by a limited number of people. The NPfIT has assumed the patient has given their implied consent, to transfer their records to the central system, as they already allow their GP to hold their records. It is not clear how access to the records will be controlled (Becker, 200; Anon, 2006).

Family doctors have already complained that patient records have been accessed remotely without their consent. Dr Vautrey provided the first example:

“A patient was admitted to a neighboring city hospital and her full family doctor record was accessed on the ward by a pharmacist. She only found out when her family doctor told her that this had happened when she was discharged.” (HC 27th February 2008 137WH)

The pharmacist most probably had a legitimate need to access the information. The key point is that there was not a mechanism to control the access to patient’s records or to a process to notify a patient of who had accessed their records. There is a risk of access being provided to someone that is not authorized to access the NHfIT.

“A Primary Care Trust (PCT)-employed manager persuaded a district nurse to disclose her user name and password. He used these to access patient identifiable information held by a family doctor practice, whose clinical system was hosted by the PCT, without the knowledge of the data controller (the family doctor) or
the consent of the patients involved. Other PCT employees were also similarly accessing patient data. Members of the local General Practitioners Committee (family doctors) contacted the PCT but to date, no action has been taken against the manager or the nurse involved.” (HC 21st Feb 2008 142WH)

The NPfIT does not appear to be applying a rigorous approach to identifying and remedying issues with the security of the system in a timely fashion. The NPfIT has asked to be only notified of the security breaches in time for the quarterly reports of the Trusts (HC16 June 2008 HC 737-i). Delays of several months could result in the significant exploitation of security problems (Nowottny 2008; Wheeler 2008). Problems may not only relate to unauthorized access to patient records. Personal records, which include NHS numbers, are passed to a third party company, without patient consent (Collins, 2008).

Patients were not provided with the option to control access to their own medical records and to actively opt in to the system. Google and Microsoft are two of the companies in the US that are providing opt in health record keeping systems. Taking the patient’s needs as the focus the service is illustrated by the introduction to the Google service:

_The service is introduced with "At Google, we feel patients should be in charge of their health information, and they should be able to grant their health care providers, family members, or whomever they choose, access to this information. Google Health was developed to meet this need” (Lohr, 2007)._

The disadvantage of an opt in process is that patients would need to be persuaded to transfer their records. A partial implementation of the NPfIT could limit its benefit.

The project is facing significant difficulties. There is a broad range of suggestions concerning how the management of the project could be improved. It is not clear whether the difficulties are intractable and the project is failing.

3. Is the Project Failing?

Sauer (1993) provided a basic structure to establish if an IS project is failing. The model is appropriate, for the NHfIT, as a project is only recognized as a failure once the development has been stopped. Information system project failures are rarely, solely due to technical issues. The aspects of a project that can define a failure are related to the social, economic and political setting. The NPfIT can be evaluated against each of the measures (Collins, 2008; Ginneken 2002).

1. Social/Organizational
There are groups within the NHS organization that have significant power in determining the success of a project. A clear example is the nursing staff. In 2006, Royal College of Nursing general secretary Beverly Malone complained, "Nurses will be by far the largest group of health professionals using NHS IT systems, yet they are hardly being consulted or informed about developments. We know from experience that if front line staff are not involved in change, it fails" (Anon 2006). The broad support of nurses for the project in 2004 (70%) had ebbed to a minority (41%) in 2006 (Shifrin, 2006).

The NPfIT may be confusing the involvement of the specialists to a confirmation they will adopt the system. If the specialists do not perceive a benefit there is little that central government can do to impel them other than raise their compensation. An option would be to link their compensation to the measures provided by the NPfIT.

The NPfIT has been successful at introducing systems that support the existing work practices with the NHS. The introduction of the electronic storage and distribution of x-rays is an example. The system used for transferring funds within the NHS has been adopted and the system to improve the quality of performance measures, to monitor family doctors, has been adopted. The willingness of the family doctors may reflect the 58% increase in payments received as a result of the introduction of performance measures (HC, Forty Fifth Report, 19th Oct 2008).

The patients are being offered remarkably little choice. The patient will require sufficient knowledge to make a sensible choice between specialists. The likely outcome is that the patient will continue to follow their family doctor's advice. The useful functionality will be to find a convenient time when the specialist is free. The patients have not been asked to choose how they would like their medical records to be stored or who should access them. There is a benefit to centrally stored medical records but it is debatable how significant it is. The family doctor or local hospitals handle most treatment. A regional system of storing patient records should be adequate for most uses.

2. Economic

There should be a clear alignment between the control of the funding and the expected benefits. In 1986 Wessex Regional Health Authority initiated a project to install a system to link family doctor surgeries, hospital wards and district nurses (Beynon-Davies 1995). In 1990 the project was canceled due to poor financial management, resulting in costs exceeding the initial budget, in addition to the reluctance to use the system. An unusual element of the NPfIT is that the funding, for the implementation of the system, comes from central government. The hospitals, clinics and surgeries do not have to priorities their expenditure for the project. In the case of NPfIT participation does not necessarily mean acceptance of the benefits.

There is not a clear assessment of the financial return of the project. There was still significant uncertainty concerning the requirements for the system as late as 2008 (Heath 2008). The cost of the system has ballooned and the time to implement the system has slipped significantly to 2014 (Anon 2008). The projected
savings consist of £4 bn ($5.6bn) from the centralized purchase of infrastructure and services and £1.14 ($1.6 bn) from unspecified efficiency gains. No account has been made concerning the impact on the competitive market of specialist software companies that provided solutions for the NHS, which are being replaced by the NPfIT. The most significant cost has not been mentioned. Up to 90% of the costs of a project can relate to maintenance of the software and implementation of modifications (Seacord, Plackosh, and Lewis, 2003). The cost could be particularly high for the NPfIT as requested changes will have to be managed and implemented from the centre. There is not a published process that outlines how the changes will be prioritized. There is little incentive for the contractors to minimize the operating costs of the system as they are paid once it is implemented. High operating costs would likely benefit the contractors as they have the skills to maintain the system. There needs to be an additional and significant benefit to justify the costs of implementing and operating the NPfIT.

3. Political

There is a wide range of interest groups involved with the operation of the NPfIT. There are significant differences in the relative powers of the groups. The patient has little influence on the system and only has the option of opting out of the central storage of their medical records. The family doctors have agreed to used the system that also supports their significantly improved contractors. The specialists can influence the system they adopt but are not in a position to reject its implementation. The hospital and primary trusts do not control the budget and are not able to prioritise the expenditure. The group that appears to have the greatest power is central government. The NPfIT has stopped the introduction of competitive systems. The business case is not stated by the NPfIT making it difficult for it to be judged on the performance of the project.

The main benefit of a centralized system is control. With the existing system funds are allocated to the health providers. Central government is increasing expenditure each year without a view of where the money is being spent and where efficiency gains can be made. The NPfIT could provide information concerning the treatment of individual patients and the resources consumed to provide the care. With greater transparency, the power of the specialists to allocate resources could be questioned.

4. Conclusion

The NPfIT was initiated by the central government, in 2002, to provide a national system for the storage of patient records and provide capability for patients to choose which hospital they would like to visit and with the support of the family doctor the specialist. The cost of the project has increased from £2.3bn, with an expected date of implementation of 2005, to £14.4 billion to be implemented by the end of 2014.
The NPfIT is not a successful project. The expected cost of the project is far greater than expected, the time to deliver the project has been significantly extended, the medical staff are not happy with the functionality and patients have not been adequately consulted. Most surprising of all is there is not a financial case for completing the project. The costs are based on estimates without a clear budget and an explanation of the variances.

In early 2009 the implementation of the core functionality, for the storage of patient records, had only started in one of the four regions. The focus of the system development has been to produce a standardized system to store patient records. The complaint of the medical staff, involved with the initial implementation of the patient records, was the difficulty adapting their work practices to the standardized system. The approach taken to determine how the patients' records are stored and accessed has been very much that the NHS knows best. Recent cases of unauthorized access, to the centrally stored patient records, could lead to a break down in the level of patient trust. The concept of patient choice is attractive and supported by surveys. It is not clear how the patient can benefit from the introduction of choice without specialist knowledge to guide their decisions. Even when the family doctor provides recommendations, the patient is unlikely to be able to differentiate between the options. The implication is that the benefit to the patient is limited to access to an online diary to find a convenient time for an appointment with a specialist.

It is not immediately clear why the project continues. The area where the NPfIT may succeed is to provide greater transparency concerning the consumption of resources within the NHS. Patricia Hewitt’s statement can be used to establish if the NPfIT can move beyond providing detailed information concerning allocations towards a market-based system.

"It would be a pretty odd kind of market where the user cannot pay and the providers cannot compete on price." (Tiggle 2006; Anon 2006)

To operate a market based system details of each patient’s treatment is required. The costs for specific treatments, from each provider, could be calculated, success rates recorded, and alternative suppliers selected. The detailed information of treatments at the level of the patient could be used to move the performance monitoring down the hierarchy to individual doctors. With the centrally funded NHS the ‘user’ is the family doctor who advises the patient. The competition may not be at the level of the patient but the system could provide the information for the family doctors, to select the specialists on the basis of cost and quality. The outcome could be a significant transfer of power. The allocation of resources could be determined by the payment for each treatment rather than the receipt of an allocation. Limited resources could be directed towards the most efficient providers of healthcare.

A reduction of just 2% to 3% in the NHS budget of £90 bn, in 2009, could justify the NPfIT. The system is an integrated platform that includes, finance, patient records, digital x-rays, patient bookings, pathology and
prescriptions. Once implemented, it will be very difficult for individual hospital to move to an alternative system. The most significant implication is that government policy is integrated into the system. Before policy could be changed £14.4 billion of "wiring" would need to be removed and replaced with an alternative information system.
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