

Strategic information management in health care – myth or reality?

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This paper uses data gathered from a case NHS Trust in Scotland to demonstrate progress in terms of operational and strategic information management and to highlight some of the problems currently experienced in the health-care environment in striving to comply with governmental policies relating to information sharing.

Progress has certainly been made and there is recognition of the potential to be achieved from more efficient and effective information management in health care. Problems exist, however, and there is still a considerable gap to be filled between the policy objectives and what is actually achievable in reality on a day-to-day basis. Data have been gathered from a hospital and a health centre to illustrate information flow between two of the Trust entities and a benchmark has been provided, showing that best practice can be achieved and how it can be achieved.

Introduction

Changes in technology, competition and consumer demands have brought about the need to alter strategies and infrastructure in most organizations.¹ A new culture of change needs to be fostered without loss of organizational cohesion and stability. Both public and private sector organizations must develop an explicit and shared vision of strategic direction for future success.² Primary health care is a case in point, especially as it forms the core of the NHS in Scotland, and is to be the epicentre of a seamless health service that puts patients first and offers them the treatment they need in a timely and reliable way.³ The integration of information through electronic links has the

potential to reduce paper flow and delays in patient care and to improve patient confidentiality. The area of health informatics, involving the use of medical information and clinical systems, has proven its feasibility and is generally accepted as having value.⁴ However, relevant IT capabilities have not in some cases been available to users.⁵

A case study is used here to evaluate the critical use of public health informatics in relation to changes of national government IT policies in Scotland from a management perspective. The issues that have impacted on the implementation of Information Management and Technology (IM&T) strategies for recorded information at the local level within a Primary Care NHS Trust are investigated, in particular, the Community Information System (CIT) 2000 and the Patient Information Management System (PIMS). As Trusts such as these collaborate with a variety of independent contractors, such as general medical and dental practices and pharmacists, their management

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has become increasingly complex. Johnson and Scholes⁶ have argued that there is a need for further decentralization within the primary care sector to assist managers with both financial and critical decision-making. The Trust recognizes the importance of information being accurate and timely and the focus of IM&T is to support clinical care, while keeping demand for and collection of data under review to optimize efficiency and effectiveness. Information from the case study was gathered from the IM&T department and a randomly selected health centre.

Information management in the NHS

Pressure was placed on the NHS by the government for comparative microinformation,⁷ with performance measurement being regarded as important for the development of national statistics.⁷ Bodenham and Wellman⁸ argued that the wide range of business processes within the NHS called for different levels of accuracy and communication of recorded data; however, no data-recording standards existed on a national scale.⁷ After 12 years, in 1984, the Korner Committee was established to address data issues⁹ and more specifically to ensure that IT and operational systems would become part of all district management agendas.⁷

In 1995, the Audit Commission published *For Your Information*,¹⁰ highlighting how and why information as a resource had failed and the steps that clinicians, managers and the NHS should focus upon in the future. Throughout the 1990s, concerns about high levels of IT investment in the NHS and the lack of apparent benefits were reinforced when a Regional Information Systems Plan Network was abandoned in 1990, incurring losses of up to £40 million.⁵ The NHS was not the only victim of such losses, and Galliers¹¹ argued that problems of cost containment and successful IT integration in both the public and private sectors were identified as major issues faced by senior management. In all, 70% of organizations implementing management information systems had in fact experienced staff difficulties with information overload.¹¹

The introduction of quasi-markets and a new governmental relationship between purchasers and service delivery agencies¹² required clearer communication channels. Raftery and Stevens¹³ emphasized that the information needs of

purchasers necessitated a structured approach to data collection and the purchase of services. The separation between purchaser and provider encouraged built-in incentives to achieve greater efficiency and made it possible for managers to address both the needs and limitations of available information.

While on the one hand patients are generally more informed about medical terminologies, changes in medical technologies have worked against patient knowledge, as information asymmetries between doctor and patient have been further complicated by the introduction of new health service information systems.¹³ The collection of quantitative data was prioritized at the same period during which internal market activities (such as medical audits) required the collection of volume, cost and quality data for analysis.¹³ However, as Keen and Muris⁹ argued, the level of detail required for these audits was unprecedented and further administrative and clinical problems were introduced into the NHS, with the consequence that the government made available large sums of money for the procurement of new computer systems to support internal management processes.¹³ Important IT decisions were therefore made in haste,⁹ with no accompanying integrated information policies for systems coordination. With IT being introduced on a policy-by-policy basis, procurement was done to satisfy immediate information needs, with a much greater potential for error also being introduced.⁹

Management of future change and modernization of frontline delivery of care and services will depend to some large extent on the ability to capture and communicate analysed information. Good data will be crucial to the success and speed of assimilation and to the transfer of user demands. Effective management of these changes will in turn require the replacement of traditional bureaucratic approaches and the management of employees through new strategies and practices.⁹ Keen and Wyatt¹⁴ argue that the delivery of a national infrastructure for the exchange of information must be approached as a long-term national goal rather than as a short-term project. For patient care and services to be redesigned and delivered to satisfy the special needs and circumstances of consumers, a modern, effective working environment for clinical practices and care processes will rely on the integration of good quality information

and communication technology.¹⁴ Historically, however, IT projects in the NHS have been undertaken in isolation, leaving a fundamental reliance on paper-based systems.⁶ Technology has tended to support administrative and financial functions, with little consideration of its contribution to the delivery of patient care and health services.⁵

*Building the Information Core*⁵ outlines the expectations for future integration of information through IT, with key objectives being to make the best use of modern information and communication technologies and highlighting the role of information management.¹⁴ However, years of under investment, a lack of national common standards or infrastructure and the dominance of a risk-averse management culture are likely to prove problematic.⁶ The NHS 2001 Plan provides a clearer focus for the essential need to design new IT strategic networks around the patient, with the current operational system needing to be reformed to create new and more effective clinical practices, care processes and ways of working. The national information strategy implies the development of local implementation strategies.¹⁴ The reformed *Information for Health 2000* strategy³ has imposed a clause whereby local health communities must develop and publish implementation plans within five years.⁶ As a consequence, access to supporting IT funding will be based on these plans and their approval. A clear connection will have to be established between local implementation strategy proposals and the implementation of the local Health Improvement Programme (HIP).⁶

Research methodology

The broad aim of the research was to investigate the reality of information and information systems management in a case NHS Trust, beginning with an investigative procedure to gain knowledge and familiarity with the organization. Initial data collection involved consultation of relevant documents such as Trust Implementation Plans, Local Implementation Strategies, IM&T literature, and pertinent Public Management and Administration documents. The researcher then arranged informal discussions with a variety of NHS participants in areas such as administration, finance, nursing and general practice to gain an understanding of relevant internal cultural, political and IT-related issues. These informal

discussions highlighted that changes in the relationships between different professional groups, along with a lack of training, had created both cultural and bureaucratic problems in the health-care environment. Consequently, computerization of paper-based systems had not always been a complete success and in some cases had failed in the work place. It is arguable that any changes between groups in terms of individual responsibilities and accountability would always be conditional upon the individual's understanding of, and cooperation with the implementation of new organizational strategies. This preliminary research contributed to the initial structure of future interviews and the avoidance of irrelevant questions to NHS managers in the case organization. Informal and formal meetings were also conducted with the Head of IM&T, the Head of the Network Division, the General Manager of the Local Health Care Co-operative (LHCC) and the Head of District Nursing.

For this case study, a grounded approach was chosen in order to generate theory from the research data gathered.¹⁶ As an exploratory case study develops, Baum¹⁷ suggests that the researcher bear in mind that the collection of data for government policy, health education and promotion within a given community would benefit from a methodologically eclectic approach. Therefore, Baum argues, commitment to a particular methodology would lose both needs assessment and evaluation of enriched data for further development.¹⁷ In this particular instance, an eclectic approach was hampered by time and cost constraints and a fuller use of theoretical frameworks was not possible. Hence, the findings from this study aim to provide a representative snapshot of the realities of the implementation of new information systems and the subsequent problems encountered by both managers and end-users with the integration and flow of strategic information as a whole.

Themes and perspectives from the case study have emerged from the data collected and have contributed to tentative generalizations that are useful but are not in any way conclusive. Gilbert¹⁸ argues that a qualitative approach will tend to include some interviewer bias and generalization, but this tends to be simply a matter of interviewer difference and data in general will tend to contain some elements of error and bias. By adopting

an interpretive approach towards qualitative data collection, social action could be explained in terms of meanings and motives. A quantitative approach would not have been suitable to investigate the problems encountered after computerization by managers and end-users.

Unfortunately, the reality of qualitative data gathering frequently involves a certain hostility from those being examined. Baum¹⁷ and Gilbert¹⁸ identified two primary issues of concern. There is firstly a potential problem with openness of access on the part of the organization or individual concerned. Secondly, there arises the issue of the overtness or covertness of research methods employed. In this instance, employees from different departments were happy to be interviewed but their availability was a constraining factor. Managers were busy with both departmental day-to-day operations and with meetings. As access is an essential element of the research process, given the time constraints for the study, the focus of the data collection was changed from a group setting to personal in-depth interviews with a variety of staff across the Trust, focusing in particular on the IM&T department and a randomly chosen health centre. While the majority of interviewees were extremely keen to discuss IT issues, some were hostile and not receptive to investigation. Semistructured, open-ended questions were used to allow for flexibility and provide enriched data. Conducted informally, the main objective of the interviews was to discuss IT problems in relation to recent policies.

Research context

National health information management strategies

To support better care and communication through the appropriate use of IM&T, all Trusts must align themselves with the National IM&T strategy.¹⁹ The NHS Executive strategy of 1992 stated that the complete patient record be available where and when required, that data be requested and captured only once, from which management information be derived regarding day-to-day operational activities, and that IM&T be regarded as an investment rather than a cost. The recommendation was that all Health Authorities give a higher priority to such investment.²⁰

In 1998, a new document – *Information for Health* – provided the context for the examination and development of an IM&T strategy at the local level within the requisite changes for NHS information management at the national level.³ This strategy proposed the development of lifelong electronic health records for every person in the country and access for all NHS clinicians to online patient records and information about best clinical practice. The main aims were to establish seamless care through GPs, hospitals and community services sharing information, to provide the public with fast and convenient access to information and care through online services and telemedicine, and to achieve more effective use of NHS resources by providing health managers with the information they need.

More specific to Scotland is the introduction of NHS Scotland's Strategy for Information,²¹ which is to emerge with certain key priorities in mind. First, it must be acknowledged that there has been historical underinvestment, with the consequent imperative to address priorities in local planning. Second, there exists too much variability across the NHS in Scotland and everyone needs to be brought up to the level of the best. Third, and most importantly, there is the need to develop a partnership between clinicians and IM&T professionals in order to develop and promote relevant IM&T. Finally, it is important to be innovative in IM&T development, taking care to exploit the potential of the latest technologies available by undertaking appropriate research.

The Scottish national plan will provide a clear statement of national priorities for health and the NHS, with an emphasis on the translation of policies into tangible, practical measures that will deliver future results.¹⁵ It is, however, clear that a local IM&T strategy cannot simply be implemented on a single set of national guidelines and there is also likely to be considerable uncertainty among individual Trusts as to whether or not they have complied with national requirements. It also goes without saying that considerable efforts will be needed and a number of problems will be encountered in the movement away from a paper-based system towards an integrated community-based health services delivery system.

Current developments in the case example

The vision of the Trust is to fully integrate a suite of clinical systems that will support direct patient care. Only when this is achieved will the Trust provide a truly integrated local and national electronic health service that will produce and support health objectives, clinical effectiveness and integral quality standards. In reality, the Trust has experienced a continued need to reconcile the costs of providing current services and the additional income required for new clinical IT developments. In order to manage this financial gap, a strategic review of services was introduced, examining IT issues across the whole of the local health economy from local general practice to specialist hospital services. As a consequence, the LHCCs within the Trust have brought together local GPs, hospital and community-based staff with colleagues from Councils and voluntary agencies to improve health and the quality of the patient's journey within the community. Key issues in the immediate future are to develop an integrated primary health-care work team model and strengthen the scope of primary care in terms of the management of chronic disease.

The Trust has an ambitious IM&T strategy with the objectives of collecting relevant data and providing good quality information. There has been recognition of the obvious benefits to be gained from collaboration within an area of scarce human resources, and Trusts in the geographical surrounding areas have been jointly involved with the development of similar linked strategies. In particular, issues surrounding the wide range of different terminologies in health informatics have been addressed, along with supporting data and technology to provide and use information for the delivery of patient benefit within primary care. The aim is to alleviate many of the challenges and problems encountered with the development of services for patients, clinical governance, administration, audit and cultural change. Every effort by the Trust has been directed towards the elimination of data duplication and improvement of security to enhance both quality and reliability of information. However, the reconciliation of disparate legacy systems remains problematic.²² Technical issues have largely been tackled by a combination of migration, replacement or integration.²²

The wider context of information management involves GP practices, which have increased their use of Practice Management Systems, particularly the General Practice Administration System for Scotland (GPASS). The past two years have witnessed the use of this system by 84% of medical practices and substantial investment in hardware and software to build the local network infrastructure. Furthermore, an area-wide communication network strategy has been established and links will gradually be installed within every hospital and primary care location. Preliminary work has also begun to enable communication with other primary care contractors, such as pharmacists and optometrists.

Naturally, all these developments require support for the management of change. The education and training programme aims within the next five years to ensure behaviour and culture change, and the accustomed use by NHS staff of information and technology management tools, which are to be integrated into mainstream education, training and development across all NHS disciplines. The Trust has also attempted to develop a stronger collaborative culture within its primary care setting by reducing inequalities and promoting the efficient use of key resources through the integration of staff and facilities.²³ Success will depend to a large extent on the capacity, flexibility and willingness of the staff involved to change and accept a new IT environment.²³ However, in spite of the need to break down the old-fashioned demarcations between staff to improve services, there are still ongoing cultural problems between different levels of clinical and administrative staff. IT training has therefore involved a mix of all staff levels in order for everyone to develop new skills and roles within their departments.²⁴

Finally, the 1998 Data Protection legislation and formal adoption of the recommendations of the Caldicott Committee have prompted a root and branch appraisal of the way patient and employee information is managed. Similarly, procedures and methods of informing the public and sustaining their confidence have been under review. Meetings are therefore held regularly and a particular form of patient information that will comply with the necessary requirements of the 1998 Data Protection Act has been agreed upon.

Case study findings

Just as corporate information managers often struggle to cope with senior management requirements from their headquarters, the Trust information managers have to comply with the demands not only from national government but also regional and local management groups.²⁵ It therefore follows that all clinicians must become central to the key management of the Trust.

At present, there are some 8000 staff in the Trust and only 1800 PC users. The majority of IT users are administrative staff and there is no consistency of data and information input across the Trust. Currently, senior management/clinicians have been given priority with access to the NHSnet and all other levels of staff will be given access over the next year wherever necessary. There are a number of technical tasks scheduled for the foreseeable future, mainly relating to PC and software installation, network configuration and Internet/e-mail access. The gap between the IT integration requirements and the current IT environment in the Trust has slowly been improving over the last six months. The immediate aim is to enable systems to be used proactively by all clinical disciplines to communicate and manage clinical tasks. All data and information is to be coded on user input and the collation of data-sets is to be aligned with national standards. Additionally, there is a need for coordinated IT support for the new NHS24 helpline.

Currently, however, the Trust is only at the basic level of the four electronic patient records levels for primary care (Information for Health, 1998–2005). Operations rely on a paper-based system and communication throughout the Trust is dominated by the use of the telephone. Functions in the main hospital include patient administration, clinical systems (care planning, pathology), support services (result reporting), financial services and management systems. Within each department, there is an inadequacy of modern equipment and IT investment has been very slow and patchy as a result of a lack of government funding.

The implementation of new IT, such as PIMS, Paragon and CIT 2000, has taken place on a priority or *ad hoc* basis to replace legacy systems, but there are integration problems between the Paragon system preferred by senior consultants and the PIMS system (which

they refused to accept). There are also difficulties relating to the limitations of e-mail access, confined to certain areas of the Trust. The medical records manager explained that a high percentage of staff had not received sufficient training and did not know how to use the new mailing service.

In order to provide patient care of the highest quality, old business processes must be described, understood and changed to manage volume, quality, cost and outcome.²⁶ Contingent on this approach is the handling of information relating not only to patients but also to staff and NHS business in general. The 1998 Data Protection Act aims to strengthen the individual's right to privacy with respect to the processing of personal data and includes manual records, which affect medical records. The IT and Data Protection policies have been made available to all staff.

Current problems

Strategic and operational benefits of information management can only be achieved with the effective implementation and use of computerization,²⁷ with data appropriately organized, structured and encoded.^{28,29} Examples of such data include clinical, demographic, financial, research and epidemiological data. The main source of health-care data is patients' medical records; problems arise when staff have unreadable handwriting, the notes are complex and disorganized, and unexplained abbreviations are included. Transfer from paper files to computerized records has therefore been difficult. Accurate and complete data need to be recorded by clinicians, preferably electronically, for example, on the wards. Data entered correctly at source and after consultation with the patient have to become routine. In reality, clinicians have expressed concerns about the time necessary to do this, with data entry being more often than not delegated to junior nursing staff. The result tends to be a return to the old paper-based system or partial information recorded on both systems. Information is then lost and work time is increased to retrieve data. While it is not possible to force staff to use the new systems, change will only occur when access to paper systems has been withdrawn and this is unlikely to happen as patients' lives would be put at risk.

Teo and Ang²⁵ have argued that the current introduction of new IT in hospitals

has highlighted a continual problem of greater significance being placed upon the procurement of hardware and software, with less emphasis on business processes, change management problems and organizational culture issues.²⁴ In this instance, few senior staff would discuss IT changes, staff resistance to the changes, or fear of change in depth. It therefore became very difficult to probe further into these obvious issues being freely spoken about at non-management levels. Similarly, most senior managers appeared to have little interest in discussing recent information strategies and consequent potential changes that would be necessary, stating in many instances that they were too busy to keep up to date with the new IT changes. It is, however, vital to acknowledge that in an era of constant change, information has been used as a means to initiate and guide new procedures.⁵

The fear of IT is also problematic,²⁴ with senior staff sometimes risking being 'shown up in front of the juniors'. Training is rarely long or detailed enough and technical support tends to be viewed as inefficient and ineffective. Both clinicians and administrative staff had concerns over the disruption that comes with change, the associated inevitable teething problems and the fact that management would be able to monitor or measure their work performance.

Can the problems be overcome?

New Zealand's Health Service has a primary and secondary system comparable to the NHS. Developments of IT integrated care projects in New Zealand are not dissimilar to those in the UK but they have involved the efforts of all the stakeholders. When collaboration replaced competition in 1996, benefits had already accumulated from the competitive era in 1993, with different health-care entities having newly developed IT infrastructures ready for integration by 1996.

In one large hospital, priority was given to the implementation of a booking/appointment system. Once requisite performance levels had been reached and the benefits of more effective information management realized, attention was directed towards the management of outpatient referrals. Hospital consultants initiated most of the work needed to reduce waiting lists and inappropriate or inadequate GP referrals. Joint referral protocols and guide-

lines were developed to clearly outline when a patient should or should not be referred. With the introduction of mandatory electronic referrals, consultants and GPs engaged in a prioritization process, sharing resources and information to provide a better service. Furthermore, GP fax lines introduced into outpatient departments developed a more responsive return service, reducing the volume of outpatient referrals.

One of the 10 national integrated care pilots developed a seamless health service for the elderly. The executive team included stakeholders from the primary, secondary, community and residential organizations with an independent facilitator. Follow-up consultations were taken from the secondary into the primary care setting, and an expert system was developed jointly by consultants and GPs to carry out post-discharge assessments. The information gathered was then shared with the consultant electronically. Only in exceptional circumstances was the patient referred back to the consultant. As a result, the waiting list for follow-up consultations was reduced by 80% and the availability of outpatient appointments was improved.

A nursing informatics case example

One of the health centres in the Trust was used to investigate issues of communication and integration of information flows. Electronic data input in a health centre permits better time management and the provision of a more efficient and effective service that can be integrated with the GPASS system and the NHSnet. It must, however, be borne in mind that a health centre is independently owned by the GPs through a business partnership, and is therefore run as a small business. The Trust therefore cannot implement or force new IT change if the practice does not wish it.

The CIT 2000 system aims to support business processes and provide relevant, timely information and communication links for district nurses in the course of their operational service-delivery activities for their patients. Additionally, audit and management information can be obtained from the aggregate data. A number of advantages have ensued from use of the system: enhanced communication flows, improved confidentiality, better file safety and security of patient information, improved speed of request and

presentation/organization of information. Access to e-mail has also proved very useful. Disadvantages have, however, also been experienced: access has tended to be available via a password pinned on the wall with potential risk to security, the system is not connected to any other system, the extent of data duplication is high, there is no file provision for the input of medical equipment to patients, data entry has proved time consuming and the system does not deliver the requisite audit and management information.

The CIT 2000 system should have improved communication and consistency of advice to patients, shared and integrated clinical information, and improved the professional relationship between the district nurse and the GP. This has not, however, happened and there still seem to be some problems with GPs not necessarily wishing nurses to have such ready access to patients' medical records. The GPs use a very basic Torex Meditel system (Torex Plc, Banbury, UK) to store patient information and the CIT 2000 system cannot be integrated with it. Such integration would provide access to both the patient's clinical history and all other information held on record, resulting in a comprehensive longitudinal record to support daily operations and improve the quality of care delivered to the patient. The technology was just not available at this practice to achieve this. When senior management were asked why summary data and reports from the CIT 2000 system had not facilitated improved information analysis, the response was that the system did not provide usable information and specific information was requested from the district nurse over the phone. The district nurse, however, had explained that following training and briefings on the system, they had been led to believe that the system was designed to improve the quality of information to support senior management.

An overview of health literature case examples for general practice reveals that currently all communications about patient information to and from the hospital are on paper, apart from laboratory results. Moving away from a paper-based system within the health centre would entail the appointments system being completely computerized and GPs working on a computerized patient record during consultations, thus saving the receptionist having to file or retrieve such a record. There would be benefits for GPs in the form of possible prompts

to guide them through the consultation. For example, if a diagnosis of high body mass index was to be entered, an automatic prompt for referral to the practice dietician would be highlighted. To reduce the drug budget within the practice, the computer can suggest consideration of a cheaper alternative to keep costs down. What is more, communication with other organizations outside the practice could be enhanced. Downloading hospital pathology and X-ray reports would save time and money and improve service delivery. The GP could check the results online, make further comments and store all the information on the patient's electronic record. The receptionist would then access this information for patients requesting their test results. Hospital letters could also be scanned into the clinical system, with staff then being able to read a diagnosis made by a consultant and highlight in the electronic patient record any further requisite action. With all staff having access to all relevant data, it would be essential to have ID codes to indicate who had accessed the patient's information. This case health centre and health centres in general could finally deliver the Government's vision of an integrated primary and community electronic patient record. At the same time, however, every hospital would have to become computerized for the whole system to work efficiently and effectively. New Zealand, with a similar health service infrastructure, has achieved this, so what about us?

Conclusion

Government reformers have introduced strategic management into the health sector.⁶ However, to understand strategic management, effective health managers must comprehend the complexities that will impact on planned strategies, such as internal and external opportunities, and the threats and requirements of different environmental forces. What is more, an organization will only succeed by adopting strategies that fit its environment⁵ and this means focusing attention on sound strategic planning and the methodologies required for successful planning.³⁰

In the case example presented, there were ongoing tensions between centralized policies and health sector management, and between local autonomy and the demands of governmental IT initiatives. While some good progress

in terms of developing new IT services and increasing the quality of information for both staff and the local community has been made, actual IT implementation has been modest and cultural changes are yet to be realized. The continual demands placed on the Trust by central directives and required performance targets have hindered progress and the IT solutions needed to manage new complex infrastructures are potentially out of reach. The present situation is problematic and counterproductive for staff in terms of time management and information gathering and dissemination. This is not only inconvenient for clinicians, but also affects managers, administrative staff and patients. There are, however, links within the Trust to support the function and coordination of activities, the transfer of knowledge and the provision of care needed. Systems are independent and operate within a department or ward: wider networks are going to be needed if real strategic information sharing between different entities is to occur. Primary care will depend on the contribution of a range of professionals that need to work together. General practices need to work closely with community nurses and health visitors to offer an improved information system for their patients. The case health centre seemed largely disinclined to develop such professional relationships.

The Trust has recognized the strategic importance of information management and IT and the linkage to IT requirements, but the specificity needed for strategic integration will involve not only IT planning, information management and co-ordination of policies, but also management of staff and technology and the linking of system requirements to functions or processes rather than departments.²⁴ Information needs must be clearly identified, staff have to understand and have access to enabling technologies and senior managers need to be convinced of the implications and benefits of IT integration. Important changes are required within the Trust's structure and management processes in order to cope with such integration. Participative approaches, allowing the views of a wide range of staff members to be incorporated within the initial IT design stage, have been used and have proved successful.⁶ Incremental IT implementation also helps to reduce the extent of change and subsequent staff resistance. Major IT changes are planned for the case Trust, as for

other Trusts nationally. Whatever happens, IT development and implementation will have to be more effective and progress much brisker if strategic information management in health care is going to become a reality.

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