IS Implementation in the UK Health Sector

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INTRODUCTION

Since the mid-1980s, the UK public sector has been the subject of wide-ranging reforms involving the introduction of IS and IT. Change has been sought in the ways that services are managed and delivered, the evaluation of the quality of aforesaid services, and in accountability and costing. One of the most predominant of such changes has been the introduction of competition for services, the motivation of which has been to invite efficiency, effectiveness, and related benefits ensuing from the accrual of economies.

Pivotal to such change has been an explosion in the introduction of a variety of information systems to meet such challenges. Focusing on health care, a large part of the work of the health service involves collecting and handling information, from lists of people in the population to medical records (including images such as X-ray pictures), to prescriptions, letters, staffing rosters and huge numbers of administrative forms. Yet until recently, the health service has been woefully backward in its use of the technology to handle information by the standards of private industry.

This has been quickly changing in recent years and by 2003 the National Health Service (NHS) spent £2.8 billion annually on capital in hospitals (Department of Health, 2003a), around 10% of which was for IT. In the last 20 years, IT has added 2% to overall health expenditure (Wanless, 2001). This investment is still small by the standards of the private sector, but is all the more significant when we consider that health care is an industry which has been slow to adopt IT and one which presents some of the biggest IT opportunities (Department of Health, 2002).

BACKGROUND: INFORMATION SYSTEMS IN THE NHS

The implementation of IT in the UK health sector has been fraught with difficulties. In fact, estimates suggest that problems with the first wave of projects in the public sector, from the mid-1980s to mid-1990s, cost over £5 billion (Collins, 1994). There are a number of high-profile examples of IS failure in the NHS, including that of Wessex Regional Health Authority's Regional Information Systems Plan (£63 million), the London Ambulance Service's Computer Aided Dispatch system (£1.1 to £1.5 million), and more recently, various Resource Management Initiative (RMI) Case Mix failures (£1 to £3 million) (Barnes & Targett, 1999).

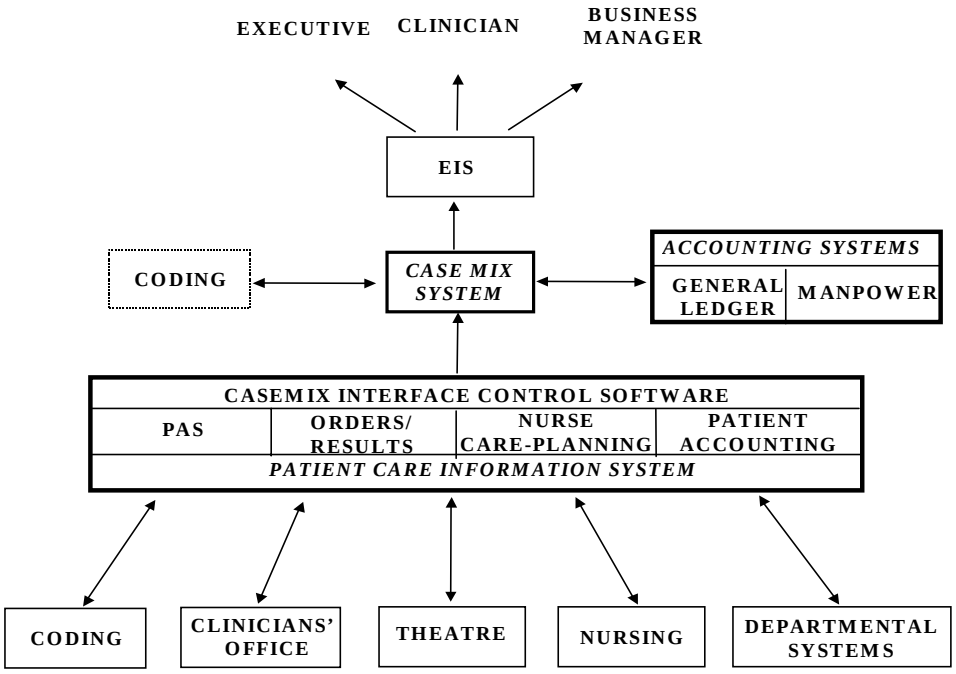
In this section we will focus on RMI and Case Mix as an illustration, since this was one of the first initiatives for wide reaching IT-induced organizational transformation and information integration in the health sector. The systems implemented have been an important support for financial developments in the management of UK hospitals. During 2003, the importance of Case Mix systems has again come to the fore as the NHS has attempted to implement prospective payment systems (PPS) (Department of Health, 2003b).

RMI was a driving force in the move towards information systems and cultural change in the NHS. First announced in 1986, RMI was going to help clinicians and other hospital managers to make better-informed judgments surrounding how the resources they control can be used most effectively (DHSS, 1986). The Initiative was not only aimed at persuading clinicians to own the management process, but to provide them with accurate, up-to-date and relevant information which could be used to cost medical activities and improve patient care. The response to this need for improved information services available to hospital units was the development and implementation of a sophisticated and extensive package of IT referred to as the "Case Mix" information system (CMIS), an idea borrowed from the U.S., with the purpose of clinical and management audit.

Prior to RMI, the introduction of IT in the NHS was patchy and limited. Where systems existed, the technology was very varied, incompatible, archaic, and dependent upon regional computer departments to deliver necessary operational systems. The development of CMIS, with its dependence on data fed from other systems such as the Patient Administration System (PAS), radiology, pathology, theatre and nursing systems, provided a catalyst for the adoption of operational systems throughout the hospital (Barnes, 2001).

CMIS takes a central position in the hospitals' IT infrastructure, as shown in Figure 1 (an illustrative example - specifications may vary depending upon the hospital), providing a tool for collecting and analyzing data from all areas of hospital operations using an execu-

Figure 1. The role of case mix in NHS hospitals



tive information system (EIS). As we can see from Figure 1, there are two main types of data feed: financial and medical. The financial feed consists of pulling data from the general ledger and humanpower systems, particularly standard costs and budgets. This contrasts with the other main feed to CMIS, that of the "patient care information system" - a label given to the array of feeder sub-systems providing information on all aspects of patient treatment and care.

Each of the feeder systems is interfaced with CMIS, so as to provide appropriate data in an acceptable format. Such data are accumulated by CMIS within the care profile sub-system: this stores the actual tests, treatments, costs, number of cases and so on to be compared with expected "ideal" profiles or projected activity levels as drawn from the financial data, enabling financial audit. Regarding clinical audit, CMIS provides the tool for assessment of the professional clinical practices of each clinician.

EXPERIENCES IN INFORMATION SYSTEMS IMPLEMENTATION

In addition to traditional problems of IS implementation, RMI also reveals a number of interesting and contrasting influences on the early implementation of strategic IS in UK hospitals:

- *Central influence* - Regional authorities (RAs) had a substantial influence on the development of systems in a number of areas, for example investment justification, what to procure, objectives, financing, and project management milestones. Importantly, the original "standard" systems were not sensitive to the needs of individual hospitals, affecting stakeholder support and the need for project redefinition. Where relationships with RAs were tenuous, RMI was looked upon with suspicion. Initiatives imposed subsequently changed the shape and direction of the project, and created other priorities within hospitals, while recommendations about clinical coding were never clear. Central influence is, interestingly, both a reason for the existence of the project, and for many of its problems: paradoxically, it is both an enabler and an inhibitor.
- *Project purpose* - The problems in communicating the purpose of CMIS, and in approaching locally sensitive designs, affected the attitudes of stakeholders: the project was very much an imposed directive. Many individuals were unclear about the rationale for CMIS, and this was compounded by the traditional absence of IT within hospitals. While RM was aimed at improving resource allocation, ironically, many saw IT spending as a waste of money as opposed to direct patient care.
- *Clinicians, management and CMIS* - Hospitals are distributed organizations, with a variety of frag-