Co-evolving roles and technologies in the NHS: Barriers and forces for change

ESRC E-Society Programme

Globally there is a move towards the digitisation of health information both personal information such as health records and non-personal information, such as research findings, policies and procedures. In the UK these developments are being spearheaded through the National Programme for IT. Drawing upon the experiences of over 200 people involved in the health service, this project studied the changing roles of managers, staff (clinical and support) and patients in the e-society. The focus of the project, conducted by Professor Ann Blandford and Professor Peter Lunt at University College London, was to understand how roles and relationships are changed by the introduction of new information technologies and, conversely, how people and their work are shaping those technologies and their uses.

- Where the values of workers in the health service are at odds with the new technologies, or where they simply don't fit well into established practices, they tend to subvert organisational structures and practices.

- New technologies and standardisation undermine of health service workers' pride in their knowledge, skills and the ability to solve problems creatively. Furthermore, these users do not trust the technology due to previous experiences of accessibility and reliability problems.

- This subversion of organisational and structural practices, and the new technologies, is often concealed behind a surface of compliance. In other words the actual practices of those operating in the sector are not the same as those that they project.

- Technologies can adapt to fit into practices where they are constructed in dialogue with users in the Health Service.

- New technologies have the capacity to improve aspects of the NHS, particularly with regard to efficiency and communication, but only where they are designed to fit with working practices at the individual and team level.

- The role of intermediaries acting between users and designers is increasingly significant in overcoming the barriers of change in the NHS.

Background

As health information becomes digitised there is a growing need to understand how this will impact upon patients, staff and managers across the health service. This is the central focus of this project.

If the shift toward the digitisation of health information is to result in improved performance and quality of life then it is essential to understand the interrelationships between technology design and deployment and the roles and relationships of the users of that technology. Furthermore, in terms of academic research, the Health Service, with its social and organisational complexity, provides an ideal environment in which to analyse the competing and cooperative forces of technology.

The Project

The project applied qualitative methods based around participant observation, enriched by in-depth interviews and focus groups. There were two strands to the work: the main part focused on experiences and perceptions of digital libraries (i.e. sources of non-personal health information) across a variety of work settings; the secondary part involved a series of focused observational studies of the introduction of new technologies in particular healthcare contexts (including patient information, patient booking and patient record systems).

User groups studied included:

- Patients and their representatives
- Clinicians
- Other healthcare professionals (such as librarians and IT staff)

The study examined the use of these technologies in primary care and hospitals in both urban and provincial locations.

Overall the project involved around 200 participants from across 8 NHS trusts.

Participant observations across these different locations, examining diverse technologies and users, enabled the investigators to draw out shared themes across the different settings. The two most prominent of these themes are:

1. Forces for and barriers to change

There are competing forces between organisational and individual technology expectations and needs, and between formal and informal practices.

Forces for change can be found at individual, team, organisation and national levels. For example, at the individual level technology can empower users if it provides effective tools for supporting their working practices. At the team level, it can facilitate effective communication. At the organisational level, technology can improve staff accountability and efficiency. And, at the national level, technology is believed to improve standardisation of practices (e.g. across NHS Trusts) and improve information access for all.

Barriers for change were found to relate mainly to individual and team working. They arise when individuals' or teams' values are at odds with those implicitly embodied in new technologies. For example, standardisation can undermine individuals' pride in their knowledge and ability to find creative solutions to immediate problem.

The imposition of new technologies that cannot be readily fitted with working practices results in surface compliance in which organisational structures and practices are subverted through personal interactions and tacit knowledge.

For example, information hoarding practices, (e.g. moving computers from shared areas into areas that are the 'domain' of one individual or group of staff or introducing authentication mechanisms on computer systems), occurred because the introduction of computers on the wards distrupted traditional information dissemination practices; in which senior staff filtered and interpreted information to be disseminated to their more junior colleagues, and they lacked confidence in the ways those junior colleagues would be able to interpret information that they acquired directly for themselves. This in turn fostered resentment in the staff who were thereby excluded.

Where the conditions are created in which technology and practices can adapt to better fit each other, technology acceptance and exploitation can create a positive environment for adopting new ways of working. Conditions for this include placing value on different kinds of knowledge and expertise, creating realistic expectations of the technology, making the technology clearly usable and useful, and giving people a sense of engagement with the design and use of technology and the attached issues (such as privacy and security).

This project suggests that a deeper understanding of expertise in practice is needed to enhance the design an implementation of digital libraries.

2. The effects of change

New roles are being created, both formally and informally, that provide support for the shortfall between technology expectations and realistic outcomes. For example, the researchers identified eight roles for information intermediaries. In particular the role of making information useful, which involves interpreting it in the context of the problem at hand, is an intermediation role that is often performed by peers (for clinicians) or health professionals (by patients).

It was concluded that there remains a need to make use of and support the changing roles of intermediaries as well as end-users as information provision shifts toward digital means.

Implications of the research

This project highlights both conflicts and resolutions in the evolution towards more democratic information provision and the digitisation of health-related information. The investigators found that many of the barriers to change are caused by unrealistic expectations and shortfalls of the technology.

Key shortfalls often relate to social attributes (e.g. trust, information interpretation) that are established when incorporating these technologies into social relationships.

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The findings of this research, in revealing the way that technology and standardisation are treated by those operating in the health service, have the potential to radically affect the strategies employed for the development of digital systems that integrate more successfully into practice and, more importantly, are flexible enough to enable individuals and teams to employ their own knowledge and problem solving skills. The successful implementation of this has implications for both those working in and patients of the health service.

Policy Lessons and Future Research

One essential challenge exposed by this work is how 'bottom-up' evidence can be brought to inform 'top-down' healthcare policy and decision making in a context of constant organisational change and strong adherence to a 'computer cult' (the view that computers can solve all problems). This project reveals how technologies are incorporated into practice at the points of contact providing valuable insight for those considering the way that technologies and initiatives are developed and implemented.

More broadly, the investigators argue that bridging the divide between theory (or expectation) and practice is essential in understanding and improving information technology design and deployment. This is an issue that clearly merits further investigation, especially in the health service. This is particularly true if we consider the findings of this project and their revelations concerning how technologies are integrated into practice in different ways to that expected by those implementing and monitoring their use.

Further Information

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The e-Society Programme

Funded by the Economic and Social Research Council and co-ordinated by the Department of Sociology at the University of York, the e-Society is a multidisciplinary programme of research that seeks to investigate how institutions, practices and behaviours are being changed by the technologies that constitute the digital age. This £5 million programme draws on the expertise of leading academics from across the UK. Launched in October 2003, the programme will run until the end of October 2007.

Further details of the projects in the programme can be found at http://www.york.ac.uk/res/e-society/