From bench to bedside. What role for nurses in helping the NHS make better and quicker use of technological innovations?

The adoption of innovative healthcare technologies with a proven ability to deliver increased patient benefits and significant efficiencies is perceived as slower and more variable in the NHS than other healthcare systems. Nurses are the largest workforce in the NHS and end users of much technology at the bedside. Drawing on a recently completed systematic review [1], this Policy Plus summarises what we know – and do not know – about the nurses' role in adopting and assimilating such innovations into routine clinical care and considers the challenges for nurse leaders.

Slow on the uptake?

The NHS Next Stage Review High Quality Care for All places great emphasis on the need to encourage and reward innovation, and accelerate the adoption of innovations through actions to 'simplify the pathway by which they pass from development into wider use' [2].

The literature on the diffusion of innovations in health care is large, diverse and complex [3]. Research to date has largely taken the 'adoption' decision as a discrete event and the primary outcome measure of interest, ignoring how and why 'adopted' innovations are thereafter used. However, increasing attention is now being paid to the political, social and cultural characteristics of organisations as key determinants not only of adoption but also the assimilation of innovations into routine clinical practice [1].

But what is currently known about nurses' involvement in the formal and informal decision-making processes, and other factors internal to health care organisations, that determine the speed and success with which technological innovations become part of day-to-day practice? Here we present overall findings from the review [1] and then those that focus specifically on nursing.

What does the evidence tell us?

There are 10 UK studies which directly illuminate the processes by which technological innovations are adopted and assimilated in healthcare organisations in the NHS. Findings highlight:

- that there is often no single adoption decision
- the importance of the history, culture and quality of inter-professional relationships
- the vital role of power and politics in determining the outcome of decision-making processes relating to innovation adoption and assimilation
- the impact of different types of formal and informal decision-making processes (and that a short-term perspective typically predominates)
- that professional hierarchies and ways of working in healthcare can be a negative influence on adoption and assimilation.

Twenty-three studies of technology adoption processes from other healthcare systems (largely in the United States) provide further insights, and an additional 54 studies (2 in the NHS and 52 from other healthcare systems) have sought to establish specific organisational factors (as opposed to processes) that influence adoption. Relevant findings include that:

- senior clinicians are key decision-makers, thus supporting the relative importance of the 'medical-individualistic' system of decision-making [4] along with the political nature of these processes,
- dynamics between the internal decision-making structures of a health care organisation and its relationships with its wider environment (for example, external networks) are important too.

And the nurses role ... ?

Few of these studies have explicitly acknowledged nursing staff as a key group that may influence the adoption, implementation and assimilation of technological innovations in the NHS. One study – of several technological innovations - found that implementation locally depended on effective relationships and cooperation between different healthcare professions [5, 6]. Although two of the innovations were originally seen as a unidisciplinary intervention, involving mainly primary care doctors, the role of nurses became more apparent over time. Innovations that attempted to shift routine work from hospital to primary care and/or from doctors to nurses encountered boundaries between professional groups as new, joint, work practices had to be agreed on and enacted for the innovation to be widely adopted and used.

A study of perceived barriers to the use of a computerised care-planning system by nurses in three UK hospitals found that a wide range of tactics (for example, delaying the writing and updating of care plans by leaving the task to the next shift team) was employed by nurses, aimed at ensuring non-adoption [7]. These actions were also explained in terms of power relations and the meaning of the system for staff. Although the technology in this study was successfully implemented in the eyes of hospital managers, resistance to using the computer system persisted long after in the shape of attempts to put off or minimise its use, thereby emphasising the importance of understanding both adoption and assimilation processes. Similarly, a study of a new networked drug distribution system in a long stay care facility in Canada [8] found it was never assimilated into routine practice because the roles and procedures built into the technology aligned so poorly with the reality of front-line nursing work; the nurses simply reverted to previous ways of working.

More positively, a US study of implementing an innovative technology for cardiac surgery found that putting multidisciplinary groups of doctors, nurses and technicians through extensive simulated training is one way of realising the gains a new technology offers [9]. The study found that successful implementers underwent a team learning process that was qualitatively different from that experienced by those who were unsuccessful. A further US study [10] identified key factors influencing nurses' acceptance and use of a Patient Care Information System to support clinical work in a home health agency. Lessons included the need for training that integrates nurse needs and clinical practice patterns, involving clinical users and management through training, and making onsite adjustments to software and role redesign so that the technology enhances clinical practice. These two examples point towards the importance of training and end user feedback in technologies implementation.

Conclusions and implications

The processes by which NHS organisations adopt certain technological innovations, and how or why such innovations are successfully implemented and assimilated into routine practice is still unclear and better understanding is needed. However, key messages emerge from the evidence:

- in order to realise the potential benefits to patient care of technological innovations it is important to see 'adoption' as a process rather than as a discrete event,
- adoption comprises both 'formal' organisational decisions and a series of 'informal' decisions by individual users including nurses,
- outcomes are influenced by interactions between different staff groups involved in the various stages of an innovation's adoption and assimilation into routine practice, and the organisational context, systems and processes,
- these factors interact in a complex way and with varying importance depending upon the innovation concerned.

Very little is known about the nurses' role in the speed and success with which technological innovations become part of day-to-day clinical practice, or how nurses respond to the (often) mandated adoption and top-down implementation of such innovations, and how these responses impact upon the potential longer-term benefits of the technology in question. Furthermore, it is not clear whether nursing leaders always have a voice in formal decision-making about adopting a particular innovation and how they can help to shape implementation and assimilation.

Key issues for policy

Nursing leaders face challenges in helping the NHS realise the benefits of technological innovations better and quicker. Specifically how to:

- help improve – from a nursing perspective - their organisation's formal decision-making processes and systems with regard to the adoption of technological innovations

- increase their organisation's absorptive capacity for new knowledge about technological innovations, specifically in relation to nursing expertise and leading-edge practice

- help ensure a receptive context amongst nursing staff for the implementation and assimilation of technological innovations generally

- improve nurses' readiness for the implementation and assimilation of specific technological innovations.

References and information

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