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Technology adoption by inter-professional teams: whose evidence counts?

The Open University

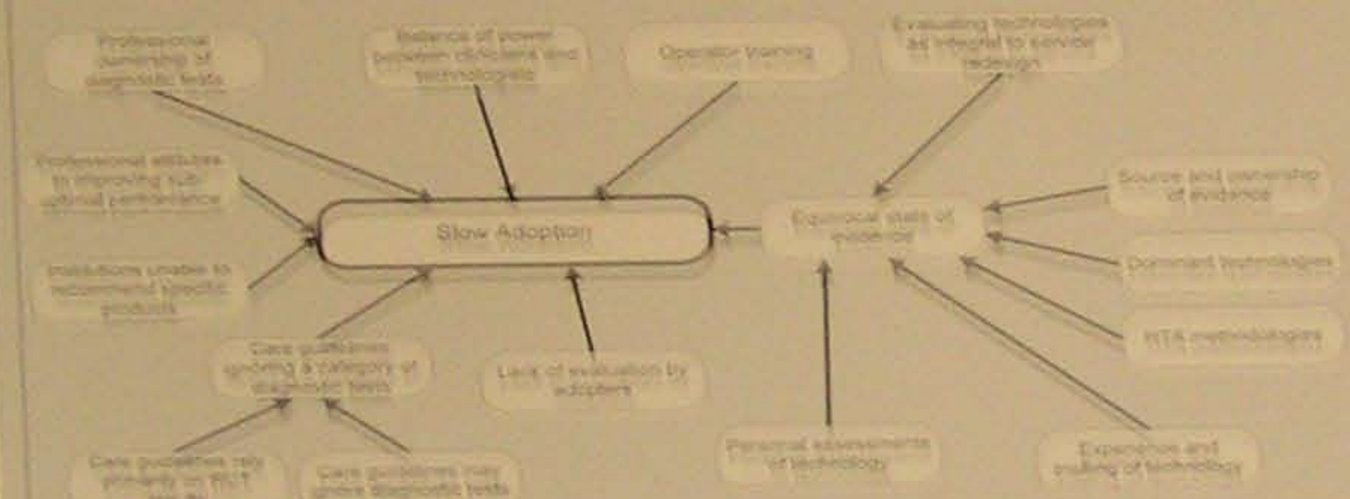
Introduction

This poster uses information gathered during an NIHR-funded project looking at technology adoption in the NHS. The primary focus of this research was to investigate the effect of the origin of a technology on its adoption within the NHS. Essentially it compared the adoption of technologies developed with the NHS with commercially-developed technologies and sought to answer the following questions:

- To what extent has the development process that produced a technological innovation determined specific aspects of the technology that have an impact on its adoption?
- For a specific adoption context, what are the main factors that mediate the success of adoption and to what extent is this success related to the technology's origin?
- How do external adoption drivers in combination with an innovation's origin impact on the potential for adoption?
- Does the adoption process differ for NHS-developed technologies when compared with those that are commercially developed?

The research undertaken to find answers to these questions revealed many other interesting insights into technology adoption that are not specifically linked to the topic of origin. One of these is that for many technologies ownership within the NHS takes a number of different forms and that each form of ownership has a set of key concerns associated with it that need to be addressed before and during adoption. This poster looks at the factors that affected the adoption of a diagnostic technology and the five categories of ownership that were observed in relation to this adoption.

Factors affecting adoption



Case – a diagnostic technology

Urology is a clinical discipline where the management of long term conditions accounts for a large part of the workload. Care guidelines established during the 1960s incorporated the use of a then new diagnostic test for measuring and assessing urological symptoms. This is an invasive test that has to be administered by specialist staff and requires dedicated equipment. Since then several non-invasive tests that can be carried out by fewer or less specialised staff have been developed but these measure a narrower range of indicators. Within the urology community there has been wide variation in the amount of attention paid to these non-invasive tests despite their potential advantages. Case 1 concerns one of these non-invasive tests. It was developed by a team based in the Urology Department of a major NHS teaching hospital.

Though the new test measures a narrower range of indicators than the invasive test, its algorithm has been shown to give reliable guidance to support clinicians in deciding whether to recommend surgery, carry out further invasive tests, or to wait and do nothing for the time being. The advantages for the patient are that it involves much less discomfort and has fewer risks than the invasive test procedure. Its relative simplicity means it can, in principle, be used in clinics remote from a main hospital because a dedicated clinic suite is not needed. The capital cost of introducing it is several thousand pounds but consumable costs are a few pounds per patient.

Despite substantial clinical trialling, marketing efforts from the supplier, support from the NHS-based development team and national initiatives across the NHS, adoption has been slow. A prominent factor in this has been the extent to which the evidence available has been accepted by potential adopters and regulatory organisations. This raises the question of whose and what types of evidence are taken on board when technology adoption decisions are made. A perceived weakness in the existing evidence is that the majority of the studies were conducted within the trust where the development team was based. This has led to criticisms that the trials lack independence and fail to demonstrate the extent to which results can be generalised to other trusts. The extent to which this has affected adoption is difficult to assess but has affected the developers' ability to act as advocates for its adoption and providers of information and support to colleagues in other parts of the NHS. A clinician member of the development team had initially provided training at sites where trials were to take place but had gradually stopped doing this due to concern it was jeopardising impartiality.

The developers and supplier of the new test feel frustrated because the type and quantity of evidence produced to underpin the new test is incompatible with the methodologies used by various HTA agencies. The mode of evaluation used by NICE and other HTA oriented agencies is based predominantly on multi-centre randomised clinical trials but in the case of the test considered, a trial that assessed scientific, clinical, organisational and economic factors all at the same time was challenging as the team had built up evidence by carrying out several individual studies to address factors separately. Another difficulty in developing evidence is the extent to which its success is dependent upon successful incorporation into effective care pathways. Variation in clinical pathways and practice makes it difficult to separate the impact of the test from variations in clinical practice.

Forms of ownership observed	Key concerns
Owner of adoption decision Ownership of the decision to adopt or reject a technology is based on the power to set the agenda for adoption, control funding/resources or the authority to act as a 'thought leader' providing expert support to a decision. This is what people normally understand by adoption ownership and it is this type of ownership that most conventional forms of evidence seek to influence.	• Evidence supportive of a business case • Evidence supports clinical adoption • Evidence demonstrates use in context
Capability owner Ownership of technical capabilities and knowledge resources relating to a novel technology is a significant source of power. Owners of existing technological capabilities are concerned to manage the long term interests of their existing technology portfolio and the specialist capabilities they have developed to use current technology. A capability owner may be a clinician or a technologist based in a specific technical specialism. Capability owners are able to display greater insights about technologies than others with less knowledge and this gives their views greater credence.	• New technology fits into current technology portfolio • Technology builds, complements or extends existing capabilities • Risk of technology undermining other technologies in portfolio
Ownership of technology in routine use The principal users of the technologies within routine practice may be party to an adoption decision but their influence is more likely to be exercised during the subsequent implementation process. By taking ownership of a technology, users have the power to decide whether to embed a technology into their own practice, use it in a piecemeal or marginal fashion, or reject it. It is often difficult to identify when discontinuance of a technology occurs. The ability for some technologies to just be left in a cupboard means discontinuance may not be apparent to others.	• Technology fit with existing working patterns • Impact of the technology on workload • Impact on professional identity of staff • Professional/legal implication of the technology for the users • Need for re-training • Impact on user's professional autonomy
Ownership of test results This type of ownership affects whether a technology is used in isolation, as part of a broader range of tests or as a replacement for other test results. Ownership of a diagnostic technology can deliver the power to define how the results of diagnostic tests are to be interpreted.	• Users view the diagnostic test as necessary • Technical knowledge of users sufficient to make an interpretation of the result? • Test data provides significant extra information over other technologies
Ownership of service/pathway Ownership of the service or pathway in which a novel diagnostic test is used is critical to adoption. The service-pathway owner may not be a specialist in the same field as that in which a specific diagnostic technology lies, especially when a diagnostic test is part of a complex and diverse set of sub-processes. A challenge when providing evidence to service owners is to build their trust in a technology that may not be a primary (or even secondary or tertiary) area of clinical or technical interest.	• Evidence provides confidence to reconfigure service • Evidence provides evidence to decommission other technologies • Broad benefits of adoption can be used to support service change

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