National Assembly for Wales

Health and Social Care Committee

Access to medical technologies in Wales

Evidence from PATH (Pathways to adoption of technologies in Healthcare) – MT 30

Submission to the National Assembly for Wales' Health & Social Care Committee Inquiry into access to medical technologies in Wales

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This submission is based on the findings of a large-scale study of technology adoption funded by the National Institute for Health Research, Service Delivery & Organisation stream (later renamed Health Services & Delivery Research): Pathways to Adoption of Technologies in Healthcare (PATH)[1, 2]. The study investigated naturally occurring (market-led) technology adoption in the NHS in order to capture the processes that may explain how and why technologies are or are not adopted. Most of the data were collected in England, with some collected in Wales; we believe that the conclusions are generic and likely to be relevant in a wide range of contexts.

The submission outlines our main research findings and highlights issues of joined-up commissioning and the need for appropriate technology adoption.

1 Five fundamental features of technology adoption emerged from the PATH study:

- Notwithstanding the policy preoccupation with the question 'how fast and consistently are beneficial technologies adopted', the more fundamental and urgent question is: how *appropriate* is the adoption of all types of technology?
- The appropriateness of technology adoption and the safety and equity of access to technologies are largely *local* problems that can only be tackled effectively at the local level
- The central issue, therefore, is: **the right technology at the right place in the right way**
- There is no single form of technology adoption but at least three types on a continuum from provisional/reversible to structural/game-changing
- Evaluations of technology and adoption decisions are more 'socially' shaped than is generally recognised

Assessment of potential benefits

2.1 In evaluating technology, the evidence paradigm prevalent on the ground (among practitioners and managers), is more diverse and flexible and less science-centric than the paradigm dominant in high-level health technology policy. While the latter has, as its core elements, Health Technology Assessment (HTA) and comparative effectiveness research

[1] Full study report: http://www.nets.nihr.ac.uk/projects/hsdr/081820253

[2] First paper from the study: http://www.sciencedirect.com/science/article/pii/S0277953613005145

(e.g. randomised controlled trials), the former is a mosaic of diverse types of information that include:

- discussions with company staff at sales visits and conference stalls
- conference presentations including company-sponsored talks by champion-users
- personal use and results
- other users' results and opinions
- informal discussions with colleagues
- intuition and reasoning from theory
- published academic research (HTA)
- company websites
- media reports

2.2 This eclectic repository of information, which we have termed '**evidence-for-confidence**', has a decisive role in local adoption of technologies. While the function of formal evaluation/HTA is to ascertain the costs and consequences of technologies at the macro level and to make and legitimate NHS-wide spending decisions, the function of 'evidence-for-confidence' is to *minimise the perceived clinical, financial and organisational risks* associated with the adoption of technologies at particular localities. Practitioners concerned to ensure patient safety seek reassurance in information originating from trusted sources and contacts and open to personal scrutiny. Technology manufacturers and distributors provide favourable case studies and opinion from reputable practitioners and, importantly, facilitate the exchange of technology-relevant 'stories' between different localities.

2.3 A critical outcome of such local assessment is the production of various **technology identities**. Technologies come to be associated with a set of attributes and expectations – identities - that capture the attention of patients, clinicians, managers and commissioners. As shared concepts of the material technology, these identities are powerful determinants of the technologies' desirability, acceptability, feasibility and adoptability. Identities relate to different aspects of the technology and its use (see table below). The adoption or non-adoption of a technology is the outcome of the interaction between various identities it acquires (and loses) over time, in different settings.

2.4 For example, despite high-level peer-reviewed evidence of effectiveness, the use of a portable **coagulometer** by patients on warfarin therapy (for regular blood tests to check blood viscosity) has remained low. An important reason was the technology's identity as high-risk among UK GPs, in contrast to a (lower) risk profile among practitioners in Germany where hospital patients are routinely trained to self-test on discharge. A **surgical robot** was adopted by hospitals in England because it captured the imagination of practitioners and managers as a highly visible and desirable technology that guaranteed hospitals a reputation as 'centre of excellence' - despite very high cost of purchase/leasing, commissioner scepticism and absence of high-level effectiveness evidence. A highly innovative, NHS-originated form of **cultured cells** (for severe burns and chronic wounds) failed to be commercialised successfully because it suffered from several unfavourable identities. Its clinical rationale dissipated as the clinical need it answered (cultured epithelial autografts – CEAs) no longer existed by the time it was marketed, as CEAs were by then little used by burns clinicians. When it was reformulated as a spray it lost its distinctiveness and was seen

as simply another (more costly) *brand*. Because it was a 'component' technology, used in combination with several other techniques ('sandwich' grafts), its contribution to the outcome could not be observed directly by clinicians.

Table. Technology identity components

Technology identity	
Dimensions	**Elements**
Biography	Plausibility; Visibility; Distinctiveness; Rationale and scope; Substitute v component; Future
Effectiveness	Clinical; Cost
Utility	Clinical; Organisational; Patient related
Risks	Clinical; Organisational; Financial
Requirements	Financial; Use related; Organisational

2.5 As a result, centrally produced assessments of the potential benefits of new technologies have limited transferability and applicability in the local context where, notwithstanding the central assessments, benefits (and disadvantages) of specific technologies are locally imagined and re-formulated.

Need/feasibility of a more joined up approach to commissioning in technology

3.1 Adoption happens in different ways, from the least formal and reversible to the most formal and permanent. Some technologies are adopted on an **ad hoc** basis (i.e. for individual cases), mainly through individual decision-making, and are highly reversible. Others represent an **intermediate** model, adopted by groups of practitioners and/or managers, with the possibility of constraining or widening adoption incrementally, with ongoing contracts or service-level agreements. Still others are adopted at the **corporate** level (i.e. the Trust board) and are not easily reversible. The first two types are relatively informal. Corporate adoption requires considerable time and bureaucratic investment; it can be especially complex in primary care, with processes spanning organisational and sectoral boundaries, involving several general practices, one or more commissioners and hospitals and requiring service contracts.

3.2 Commissioner (Health Board) involvement at the intermediate and corporate levels can improve adoption. For example, with service-embedded technologies (such as near-patient testing with the coagulometer as a replacement for hospital-based services) commissioners can facilitate and coordinate or even initiate adoption. The importance of a dialogue between providers and commissioners is illustrated by the case of the surgical robot. Many hospitals acquired the robot without local commissioner agreement for ongoing tariff top-

ups/reimbursements, jeopardising future hospital budgets (in some cases, the robot was bought without the knowledge of the local commissioner, despite the financial implications).

3.3. There is a case for even higher-level (National Delivery Group) coordination and planning for very expensive technologies or those with rare and/or specialist applications. Again, the robot is an example. With market-led adoption and no central NHS coordination, the robot was concentrated in the affluent South-East of England with no robots in the North, Wales, Scotland or Northern Ireland at the time of our study. This had implications for safety and effectiveness and equitable access. As the number of robots increased within a relatively small geographical area, the number of suitable cases per robot decreased, limiting the accumulation of expertise for safe use. Patients in other areas had no access to the technology.

Appropriate technology adoption

4.1. Much NHS exposure to new technologies occurs not within a linear chain (development, evaluation, demonstrated cost-effectiveness, adoption, diffusion) but within the market economy: manufacturers and distributors promote technologies directly to practitioners and sometimes managers. This is the case regardless of the type of adoption as outlined above. At the time of marketing, these technologies are at various stages of development with different levels of supportive evidence. Most device technologies come to market with little or no high-quality HTA evidence and some may never acquire this.

4.2 Technology manufacturers and distributors have extensive access to NHS decision-makers and influence decisions by providing key information and practical help and support, for example effectiveness data and templates for use in business cases and service contracts. Often, the companies are the only source of this type of support.

4.3 The local context and stakeholders modulate technologies' safety and effectiveness. A technology shown to be beneficial in formal HTA studies may produce considerably less beneficial outcomes locally depending on the *way* it is used (by whom, for whom, how often).

4.4 The critical questions, therefore, are:

- Based on the available evidence, is this technology safe and at least as effective as immediate alternatives?
- Is it the right one for this locality given the infrastructure and organisation of care delivery?
- Is it likely to be used in the right way at this organisation, that is, in a way that enables the expected benefits to accrue?

4.5 The concept of technology identity goes a long way to explain why technologies are adopted or not adopted, both those promoted officially and those promoted in the market place. In seeking more appropriate adoption, it is essential to pay attention to how technology identities shape decision-making. An important step here is to equip decision-makers (practitioners, managers, commissioners) with reflexive interrogation skills that enable them to deconstruct and revise technology identities as and where necessary. In this regard, a **reflexive decision aid** may help in identifying and questioning: the dominant identity of the technology; the information sources and evidence instrumental in the

development of this identity; the extent to which expectations from the technology are realistic given organisational realities. Furthermore, such a tool would encourage dialogue and collective deliberation and increase documentation and transparency.

4.6 There may be a case for creating research-skilled local '**technology adoption advisers**' who locate and assess high-quality evidence, steer organisational adoption processes ensuring inclusivity, and design and deliver post-adoption monitoring and evaluation.

Post-adoption and evaluation

5.1 Local post-adoption data collection is rare but essential to monitor the clinical, organisational and financial consequences of the technology's adoption.

5.2 Some 're-thinking' is urgently needed to align technology evaluation with the needs of the NHS. Evidence from the controlled environment of RCTs and statistical pooling of data should be complemented (and in some cases substituted) with pragmatically designed **'adoption studies'** that track the technology's effects across the care delivery system and assess the implications of the adoption process. Local evaluations that accompany local adoption can be harnessed and rendered more rigorous and transferable through the strategic deployment of expertise, for example at the Welsh equivalent of Academic Health Science Centres (AHSCs).

We will be happy to provide oral evidence if invited to do so by the committee.

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