

**Response to
National Assembly for Wales' Health and Social Care Committee
Inquiry into access to medical technologies in Wales
October 17th 2013**

[National Assembly for Wales](#)

[Health and Social Care Committee](#)

[Access to medical technologies in Wales](#)

Evidence from Dr Rebecca Dimond, Professor Alison Bullock & Dr Mark Stacey – MT
22

Authors:

Dr Mark Stacey, Wales Deanery

Professor Alison Bullock and Dr Rebecca Dimond, Cardiff Unit for Research and Evaluation
in Medical and Dental Education (CUREMeDE)

Contact: DimondR1@Cardiff.ac.uk

Introduction

1. When assessing the benefits of technology within medicine, it is important not only to focus on the new or unusual. Mobile phones for example, have increasing potential as tools for diagnosis and self-monitoring. However, one of the most common uses of a mobile phone is as an information resource. This is reflected in the words of one junior doctor involved in the Wales Deanery funded iDoc project:

“the smartphone is now as much a part of the junior doctors’ kit as a stethoscope” [Foundation year 1 doctor]

2. Information seeking is a key task performed by doctors. One junior doctor highlighted:

“To quickly verify information and be given the most up to date material available is essential” [Foundation year 1 doctor]

However, seeking and using information is a frequently undervalued activity. Despite the ubiquity of smartphone use, evidence on how mobiles are used to support the learning and practice of doctors is limited. The iDoc project [<http://www.walesdeanery.org/index.php/en/deanery/new-initiatives.html>] has a long history of identifying developments in technology supported workplace learning and evaluating their impact.

3. The iDoc project provides newly qualified doctors (F1s and F2s) in Wales with a library of cross-searchable medical texts. After downloading onto a mobile device,

these are accessible without requiring an internet connection. The texts that are currently offered through the 'Dr Companion' app include the British National Formulary (BNF) and the Oxford Handbooks of Clinical Medicine, Emergency Medicine and Clinical Specialities. The aim in providing these resources is to assist the transition from medical school to workplace (Bullock et al., 2013). This is a period associated with trainee anxiety and higher levels of patient mortality (Jen et al., 2009) as junior doctors manage increasing responsibility for patient care with limited knowledge and experience (Teunissen et al., 2011).

4. Alongside the provision of resources is an extensive process of evaluation, including self-completed online questionnaires and case reports. This response draws on evidence collected from more than 400 foundation doctors during the 'third phase' of the iDoc project (August 2012 to July 2013). Further evidence collected since the project began in 2009 is also available.

To examine how the NHS assess the potential benefit of new or alternative medical technologies:

5. The iDoc project provides an outstanding example of how evaluation can be built into the design of an intervention. In July of each year, emails are sent to all foundation year doctors explaining about the project and the resources available. Those who request involvement in the project submit a baseline questionnaire which provides a general overview of information-seeking practices. This includes questions about the frequency, type, usefulness and variation in use of workplace information sources.
6. A licence is then provided to the doctor enabling him or her to download the text books onto a smartphone. Over the year, users are required to submit at least two case reports documenting how the smartphone library was used in practice. At the end of the year, users complete a final questionnaire to document the kinds of resources they are now using.
7. The baseline questionnaires reveal the range of resources used by foundation year doctors. At the beginning of phase 3 and on a daily basis, 75% sought support or advice from a senior, 58% percent used the internet and 34% used hard copy text books. The exit questionnaire revealed significant change, with a marked decrease in hard copy text books and use of ward based computers. These results have been prepared for publication (target journal Academic Medicine).
8. The majority of case reports provide specific examples of how having access to a personal, mobile resource can support the work of junior doctors. They contain important insights into the realities of working as a foundation year doctor. Mobile technology is a valuable resource at the point of care. These findings have been prepared for publication (target journal Medical Education).

“EAU at 3am. I was due to perform my first lumbar puncture under registrar supervision. The patient was understandably anxious and my registrar did not want to have to talk me through the procedure step by step in front of the patient as this would likely only increase his anxiety! I wanted to go over the procedure beforehand and double check the equipment before I started. iDoc

was very useful for this as it enabled me to read up without having to hunt for books!" [Foundation year 1 doctor]

"During my first set of medical nights I was "fast bleeped" to see an elderly patient on my own. No details were given at the time of the bleep but as I was fast bleeped it was fairly urgent. When I got to the ward, it turned out the patient was having a fit and required immediate treatment. I'd completely forgotten the dose of lorazepam we normally give in seizures and needed the iDoc app to check it quickly before giving the medication. I was able to quickly find the relevant information." [Foundation year 1 doctor]

"I was asked to prescribe pamidronate for a patient if the calcium was high pre discharge on a Monday. The iDoc app allowed me to quickly see that this drug was not appropriate for this patient due to a very low renal function. [...] To quickly use a smartphone allowed me to deal with this task in 10 minutes rather than 15-20 minutes. In terms of patient safety, effectiveness and working in a time pressured environment this app is essential." [Foundation year 1 doctor]

9. The case reports also reveal the considerable pressure under which health professionals work, ameliorated by significant problems with more 'traditional' resources. Printed text books were reported as often being out of date, heavy to carry and ward books were hard to find. Computers often blocked external sites or 'too much' information became a problem. Accessing the internet on mobile devices was complicated by poor internet coverage in many areas of Wales. Without being able to access the resources on their own phones, the doctors highlight the potential for errors or delays in patient care.

"If I did not have access to this particular app, I would have had to leave the patient and ward and wandered to an adjacent or nearby area of the hospital in search of a BNF" [Foundation year 1 doctor]

"If I did not have iDoc I would have had to bleep my registrar who would have been unimpressed. It would not have impacted the care of my deceased patient but would have negatively impacted the patient on whom the registrar was operating as he would have had to come to the phone." [Foundation year 2 doctor]

"Had the device not been available I would have had to record the job on my ward round list and return to complete the prescription after the ward round when I had more time to access a BNF or other pharmacology information source, such as online resources. This would have added to my own workload and inconvenienced the treatment of a nauseated patient who would have had treatment delayed" [Foundation year 1 doctor]

To examine the ways in which NHS Wales engages with those involved in the development/manufacture of new medical technologies:

10. Working closely with providers and developers is essential to ensure that needs and concerns are taken into account. The iDoc team have developed a good relationship with Medhand, the software developer, which enables swift and effective communication of feedback. Which text books to offer and which modes of delivery have been central questions for each phase of the iDoc project.
11. iDoc began in 2009 when junior doctors were offered PDAs on which 19 text books were preloaded (Morgan et al, 2010). Phase 2 (2010-2011) benefited from technological developments and users were provided with a smartphone on which 17 texts were preloaded (Hardyman et al., 2013). Feedback (through the case reports, questionnaires and open meetings with iDoc users) highlighted three problems with this model of provision.
 - a. Developments in technologies were so rapid that the device provided by the iDoc team became out of date very quickly
 - b. Users reported that they did not want to carry two devices (their own phone and the iDoc phone)
 - c. Users reported that 17 texts were too many to work with.
12. Following this feedback, and in collaboration with Medhand, a licence key method of provision was organised so that users could download the texts onto their own phone. In addition the number of texts available was reduced from 17 to 5 key texts. Further changes have happened in the move towards phase 4 (2013 -2014) when different texts have been made available.
13. The iDoc team arrange frequent open meetings or 'iDoc days' for newly qualified doctors to discuss their experiences of using mobile technologies with their colleagues. The Director of Medhand, a doctor himself, attended the event in June 2013 and spoke to the group about new developments and hopes for the future. iDoc users were able to provide feedback directly. At the next event (November 2013), Dr Chris Jones DCMO will be representing Welsh Government on behalf of Dr Ruth Hussey. These events serve an important function of fostering a close relationship between the iDoc team, iDoc users and the Medhand team. Most importantly, within a supportive environment, they enable the foundation year doctors to discuss the practical challenges of using technology. It is particularly important to support foundation doctors in their professional practice in the context of media reports about mobile phones being used with patients in an unethical way.

To examine the financial barriers that may prevent the timely adoption of effective new medical technologies and innovative mechanisms by which these might be overcome.

14. The iDoc project has made considerable advances by supporting doctors and providing evidence about 'what works'. The main problem faced by the iDoc team is that despite extensive evidence of the benefits of supporting foundation year doctors with mobile resources, the case has to be proved each year to ensure financial support for the next. This means that work has to be invested each year in providing supporting evidence. This leads to more serious problems.
15. The first problem is that applying for funds each year prevents long term planning and discourages wider adoption. Licences have to be withdrawn and re allocated, and

relationships between the iDoc team and foundation year doctors can be difficult to sustain during these periods of uncertainty. Secondly, negotiating costs on an annual basis restricts the possibilities of gains from economies of scale. This is discussed at a local level, between Dr Mark Stacey at Wales Deanery and the Medhand Director. If this technology were to be supported at a national level, supporting every doctor in Wales, then the power of NHS Wales would be able to drive down the price thereby making considerable savings.

To examine the need for, and feasibility of, a more joined up approach to commissioning in this area:

16. Doctors (and other medical professionals) need accurate, up to date and easily accessible medical information to optimise the treatment of their patients. Tailored electronic texts on a mobile device have been shown by the iDoc project to help deliver better medical care. A joined up approach would enable economies of scale in delivery and encourage publishers to invest in making their content more affordable and accessible.

References

Bullock A, Fox F, Barnes R, Doran N, Hardyman W, Moss D and Stacey M (2013) Transitions in medicine: trainee doctor stress and support mechanisms *Journal of Workplace Learning* 25(6): 368 – 382.

Hardyman W, Bullock A, Brown A, Carter-Ingram S and Stacey M (2013) Mobile technology supporting trainee doctors' workplace learning and patient care: an evaluation. *BMC Medical Education* 13:6. doi:10.1186/1472-6920-13-6
<http://www.biomedcentral.com/1472-6920/13/6>

Jen MH, Bottle A, Majeed A, Bell D and Aylin P (2009) Early in-hospital mortality following trainee doctors' first day at work *PLoS One* 4(9):e7103:1–5.

Morgan M, Pugsley L, Bullock A, Phillips S and Stacey M (2010) An evaluation of trainee doctors' educational usage of a PDA Device. *British Journal of Hospital Medicine* 71 (8):461-464.

Teunissen PW and Westerman M (2011) Opportunity or threat: the ambiguity of the consequences of transitions in medical education *Medical Education* 45(1):51-59.
