No Magic Bullets:

An evaluation of an e-Health System to Support evidence-based practice in primary community care settings

Report of the Meeting held on 18th June 2013 at Days Hotel Conference Centre, Sackville St, Manchester.

Speaker: Colin Cohen, Head of IT Services, Stockport NHS Foundation Trust

Chair: Mrs Rita Arafa

Abstract

The literature on e-health systems is frequently characterised by reports of success, accompanied by the promise of a bright future, but the future never seems to arrive. The aim of this project was to undertake a case study to evaluate the implementation of the Map of Medicine in primary and community care settings, and to assess the impact it has had on the promotion of evidence-based practice. Although the system was made available to users across the NHS under the umbrella of the NHS National Programme for IT, very little was known about whether health professionals actually use it.

Colin has worked in health informatics for over 30 years. He has worked in acute hospitals, lectured at a London Teaching hospital, was the head of a shared informatics service supporting two PCTs for 7 years, and has recently moved to work in the IM&T department at Stockport NHS Foundation Trust.

As part of a doctorate programme run by the University of Bath, Colin is undertaking research to evaluate the use of an e-health system to promote evidence based practice in primary and community care settings. He spoke on this subject at the In4matics 2012 Conference, “Supporting and Influencing Care Pathways” stream.
Report

Colin Cohen has been carrying out an evaluation of the Map of Medicine (MoM) as part of his doctoral thesis with the University of Bath.

A review of the wider literature shows a poor success rate in large IT systems:

- Systems used in multiple locations, with satisfied users, that effectively contribute to the quality of care are few and far between (Wears & Berg 2005)
- Around 40% are complete failures, only 20% are complete successes (Clegg 2009)

This applies equally to health IT systems: according to one respected source (Littlejohns 2003), 75% of health IT systems fail. Systems that do succeed tend to be one-off local systems. There are many promises of success but as in Beckett’s play ‘Waiting for Godot’ the future never quite arrives.

Internationally, Protti reviewed systems all over the world and proposed the idea of a disconnect between intention and action. Governments wanted to invest money and make a difference, but it didn’t always work out in practice. It was estimated for example that the Province of Ontario in Canada alone had squandered $1Bn on an unsuccessful health IT system.

An example of a failure outside health IT is the news that the BBC has just scrapped a £100M project that was supposed to transform the way the Corporation BBC staff used and shared audio and video material.

Before going further it’s necessary to try to define success and failure. There many possible definitions, but a useful one is first to say that a system is a total failure if it never gets implemented. Then there is a partial failure where the major goals don’t get achieved or you get undesirable outcomes or massive over-runs in time or cost. A partial failure could also be where the system doesn’t continue to be used or where it doesn’t get transferred from the pilot site to other sites.

According to Wyatt, there are many reasons for doing an evaluation and more than one type of evaluation. Formative evaluation is part of a continual learning process, and is embedded (at least in theory) in methodologies like Prince. It’s also important to prove that systems are safe and effective, and to avoid unintended consequences. A large EPR system was introduced in a hospital in Pittsburgh, USA. One of its features was the ability of emergency ambulance crew to ring ahead and speak to clinical staff. The system only allowed data to be entered by doctors and not other health professionals. When the system was evaluated it was found that mortality had actually increased by a significant amount. In the NHS, we should be evaluating and
publishing results to justify the cost of programmes as well as trying to avoid repeating the same mistakes. It was Einstein who offered the following definition:

- Insanity: doing the same things over and over again, and expecting the results to be different

The speaker asked how many of the audience members were aware of the Connecting for Health (CfH) Evaluation Programme: about half indicated that they were. In a similar talk given a year ago, the audience showed a much lower level of awareness. The Department of Health set up the programme and recruited a group of independent academics to do research in a number of different areas. One of the outcomes was a huge 600-page report on the impact of e-health on the quality and safety of health care. They reviewed many sources of information world-wide and concluded that the evidence for benefits from most e-health systems was at best modest and in most cases absent. So in spite of governments having confidence in these programmes and making large investments, the evidence for any tangible benefit is elusive.

Large studies have been carried out into the Electronic Prescription Service in primary care, and the Summary Care Record and the Care Records Service in secondary care. At the time the talk was given Sir David Nicholson was presenting evidence to the Public Accounts Committee and the National Audit Office had just published an update report on the benefits realised compared to those planned from the National Programme for IT. This was illustrated for the Summary Care Record in a graph which showed a figure of 98%: unfortunately that is the figure for those benefits which have not yet been realised. The SCR research was carried out independently under the leadership of Patricia Greenhalgh (2010). Her conclusion was that most computer systems in health failed simply because health professionals do not use them. Again the whole-system demonstrator for telehealth has produced no evidence that it makes a difference.

Experts have developed a conceptual map of e-health which has three main divisions: informing and supporting decisions (either for patients or health professionals); storing and managing data (either the data itself or systems for manipulating it); and delivering expertise and care at a distance (either for clinicians or more directly for patients). The system which the speaker has studied is the Map of Medicine: it provides evidence from organisations like NICE to help health professionals follow best practice and therefore fits into the second part of the first category.

A famous case study about evidence-based medicine from history concerns the work of Dr Semmelweis in the 1840s in Vienna. He noticed that the mortality amongst women who had their babies delivered by doctors was much higher (at nearly 20%) than that amongst women attended by midwives (2%). His theory was that the doctors spread infection when they treated patients immediately after they had been carrying out post-mortems. When he introduced compulsory hand-washing for doctors, the 20% figure fell to 2%. Unfortunately he was unable to convince his colleagues and the practice was not widely adopted until 40 years later.
Oxman (1995) conducted a systematic review across several countries to investigate how to get clinicians to change their practice. His conclusion that there was no single easy way to do it – in the same way as there is often no single treatment that cures a patient, it needs multiple interventions with a resulting cumulative effect to bring about change in practice. Green (2008) stated that it took 17 years to turn 14% of research to the benefit of patient care and a more recent paper (Yuan 2010) estimated 9-10 years to turn research into evidence-based practice.

Guidelines (e.g. for the management of chronic obstructive pulmonary disease - COPD) are typically sent out to GPs on laminated A4 sheets of paper. Unfortunately the quantity of such documents received from various sources can become overwhelming, as illustrated by a photograph of the collection amassed by one of our recent speakers, Dr Amir Hannan. Even 20 years ago Dr David Sackett, the ‘father of evidence-based medicine’, estimated that a GP would have to read 20 articles a day every day to keep up with the literature. Now there are some 25 relevant journals in print, around 1.5-2 million articles a year, and many systematic reviews published every day. In one specialist area (diagnostic imaging in cardiology) it was estimated that someone reading at the rate of 5 papers an hour, 8 hours a day, would take over eight years to read work that had been published in their field. In 40 years’ time they would be ready to read the current work. Clearly this is untenable (although an audience member commented that they could always do a Google search).

The Map of Medicine was created to address this problem: it aimed to deliver to the desktop current evidence-based clinical knowledge. Information about a condition (e.g. dyspepsia) is presented in a pathway format showing the steps in the management of a patient with this condition through primary and (if appropriate) secondary care. In this example the GP using the system can bring up a list of alarm symptoms like gastro-intestinal bleeding that would trigger further investigations, and can also check the source and rationale for the guideline.

Four theoretical models were considered for the current work:-

- Diffusion of Innovation (Everett Rogers) which looks at early adopters, late adopters and laggards;
- Technology Acceptance Model which uses a regression model approach to investigate factors affecting success;
- Actor Network theory which is used by sociologists and was used by CfH to investigate secondary care and the Summary Care Record - it looks at networks of people like clinicians and managers to see how they interact;
- Normalisation Process Theory which also comes from sociology and focuses on the stages of adoption, embedding in everyday practice and sustained usage.

NPT was the chosen model. Carl May, Professor of Healthcare Innovation at Southampton and an expert on NPT, observed that if you meet a member of the mafia they will make you an offer you can’t refuse whilst a sociologist will make you an offer you can’t understand. However, any
results from the study would have to be intelligible to members of the NHS and it was hoped that this would be the case.

According to William Bruce Cameron, "not everything that can be counted counts, and not everything that counts can be counted". Because of the real-world nature of the project, the speaker’s choice of research method was a case study and mixed methods. There were no metrics for the MoM: the DoH was unable to provide information about how many people used the system and the suppliers required payment for it. An initial quantitative approach with online questionnaires was followed by a qualitative approach using interviews.

The use of the MoM sat within the context of the Strategic Health Authorities (SHAs) and the suppliers; within this at an organisational level were the PCT’s; within this at a human level the GPs, practice nurses and community clinicians; and within this at a technological level existing guidelines, other software and the MoM itself.

The North-West SHA did provide some metrics for the MoM. These were charts that indicated how far the roll-out of MoM had progressed in each local health community in terms of actions like appointing a project manager. It showed basically that the project had achieved its objective of rolling MoM out to the clinician’s desktop.

However the SHA metrics didn’t show how much MoM was actually used. Results from the online survey showed that 56% of GPs and 26% of community medicine staff used it. Similar figures were obtained on repeating the survey 9 months later.

Question How did you define ‘use’?
Answer I asked them if they used it.

Slightly more GPs in the younger age group used MoM but the results were not statistically significant. Usage was slightly higher amongst the older age group in the community staff. As expected, the main use during consultations by GPs was checking the pathway, or looking up a rare disease. The same two items topped the list for use outside the consultation, with ‘discuss case with colleagues’ coming out third. The most commonly used reference software apart from MoM was the NICE website, followed by GP Notebook and (in spite of its obsolescence) Clinical Knowledge Summaries.

According to Sir Muir Gray, former Chief Knowledge Officer for the NHS, “people are overwhelmed with poor quality data”. Colleagues of Sir Muir were contacted: although they were unwilling to discuss costs associated with MoM, they were able to reveal that there was no separate business case for MoM, but there was a requirement for decision support in the Output Based Specification for the NHS Care Record, and suppliers interpreted that as a justification for the inclusion of MoM. The Department of Health did not however specify any success criteria, nor did they include any metrics.
When pressed, DoH sources argued that the way that MoM was used was the responsibility of
the NHS, the responsibility of DoH / CfH only being to negotiate the initial contract.

One SHA said in interview that they pumped-primed 3 local health communities with some
£30,000 each to implement MoM. The only clear outcome was that two of the LHC’s each
localised one of the pathways. SHAs also offered the following observations:-

- “If all SHAs used it we’d get good value.... There’s a perception that it’s a lot of money for
  not getting very much”.
- “CfH had bigger fish to fry. The Map and the contract wasn’t a priority for them”.
- “It was under the NPfIT umbrella so it was tarnished and made engagement with GPs
  more difficult”.
- “The project was a classic case of a product looking for a home.”

Some of this was symptomatic of the difficult relationship between clinicians, SHAs, CfH and the
Local Service providers.

The usual way for the NHS to get staff engaged with something new is to send out newsletters
and organise launch events. One local launch event was deemed successful because about 100
people turned up, but unfortunately only two of them were GPs. GP engagement was sparked
more by personal contact and recommendation, especially from respected colleagues. GPs did
say in the interviews that it was difficult to stay up-to-date. The good provenance of a system like
MoM was another factor that helped persuade some GPs to use it. Sometimes MoM could be a
useful tool for helping to convince a patient that the recommended treatment was appropriate,
and it could also help in education.

Reasons for not using the system included an overly ‘busy’ screen with too many details; lack of
time; perceived lack of advantage over existing systems like CKS; and a feeling that it was more
to do with saving money than promoting best practice.

Community staff raised similar points in interviews. Respondents felt that they found themselves
dropping back into old habits after an initial burst of enthusiasm. Some liked it because it fitted
with the ethos of practising evidence-based medicine. They tended to use it when faced with co-
morbidities outside their usual area of practice, and found that the knowledge gained from MoM
empowered them when discussing a case, particularly with doctors. One of the reasons for not
using it was the lack of detail in their own specialist area (e.g. when a podiatrist wanted advice
on a problem to do with the way a person walked it might just say ‘refer to podiatrist’). Some of
the terminology was too complex for their needs. But for a nurse practitioner working in general
practice MoM could be ideal.

In summary, some of the points that emerged from the interviews were: MoM may be less
relevant to community staff; the medical model of MoM may not correspond to the way that
primary care staff actually work; age was not as big a factor as expected; more training on the system was needed; and MoM could have a different relevance as GPs take on their new role in the Clinical Commissioning Groups (CCGs).

Projects with major IT implications continued to be promoted within the NHS: the Health Secretary, Jeremy Hunt, has recently announced a plan to make the NHS paperless by 2018.

The short answer to the question 'has the MoM been normalised' (i.e. widely adopted and accepted) is 'no'. The study has also raised some wider questions like 'can we be more honest about failures?' and ‘Can health informatics claim to be an evidence-based profession?’ Perhaps qualitative research has a role in future research. When Patricia Greenhalgh produced her critical report her findings were largely ignored. She retaliated by writing an article explaining why health IT programmes need more dead philosophers – she concluded that we need ‘fewer grand plans and more learning communities’ (Greenhalgh 2011). According to Denis Protti, ‘the hard stuff is the soft stuff’ – i.e. the human part of a system is the most difficult. And according to Einstein, ‘only two things are infinite, the universe and human stupidity, and I’m not sure about the former’.

Questions / Discussion

Q The NHS aims to make ‘no decision without me’ (the patient). Were you able to speak to any patients in the study?

A No, because I had to restrict the scope of the study in order to get it finished in time. Some research was carried out by Dr Amir Hannan and his patient Yvonne Bennett (both of whom spoke at a recent meeting). The content of the system can be quite hard for lay people to understand.

Q Are patients going to have any influence in their role as customers?

A The system is available through NHS choices and it would be possible for patients to consult MoM to check the advice they got from clinicians. It would be more authoritative than Google.

Q Did you speak to James Walker (who gave a talk on MoM to the Group some time ago)?

A Yes, informally, and he provided help with context and contacts. [He pointed out] the contrast between evaluating something like PACS with structured methodology, and evaluating MoM with less structured methods.
C James provided some metrics but the push in his talk was more towards the roll-out.

A Liverpool claimed considerable success with MoM. Cost savings were difficult to quantify though.

Q Is there direct evidence that MoM improved outcomes?

A There was a Cochran review about structured care pathways which found that where people followed a structured care pathway in secondary care there tended to be fewer repeat tests and patients were discharged sooner so (at least in theory) there should be cost savings although costs might be passed on to primary care.

Comment My experience as a patient representative on a CCG was that clinicians had heard of MoM but weren’t quite sure what it was. GPs were unaware that a web portal to a local specialist hospital existed for their benefit. There is a communication problem between the IT specialists and the users.

A GPs can feel overwhelmed by change and unwilling to take on any new projects. Community staff were perhaps more willing to experiment. Users need to engage and a system like MoM needs to be embedded into the computer systems that they use. It wasn’t clear how much priority MoM had in England or how much it cost. Wales by contrast formed an explicit business case and actually quantified their expenditure and the expected returns.

C It seems that government departments in general don’t measure things – the armed forces being an example.

A The EU commissioned a large study of 20 flagship projects where they tried to quantify actual costs/savings and also non-cash costs/savings. They said it took about 7 years to break even and 9 years to accrue benefits. It is interesting to compare this with the 5-year election cycle.

Q You found that the high-level people you interviewed were reluctant to provide information. Did this worry you?

A Some of it was due to the contractual relationship between CfH and the system supplier. When I worked for the PCT and had a query, I had to follow several steps between the PCT, CfH and the Local Service Provider to progress it. In the study, the system supplier did eventually give me some free information. But there is a very complex bureaucracy.

C It does seem clear that different parts of the NHS don’t work together enough.

A CfH do deserve some credit for commissioning an independent evaluation and spending £5m on it even though it was out of a £6Bn programme. There is always a tendency towards short-
term fixes. There is no simple check-list guaranteeing success – hence the title of the talk. If GPs think the system helps them practise more safely then they will use it – if not, they won’t.

References


Rapporteur: Dr Tom Sharpe, MBCS, BCS Health Northern SG