Real innovation in healthcare delivery is driven by clinicians

A good-natured and lively debate at the HC2006 conference, hosted by the London and South East Health Informatics Specialist Group of the British Computer Society, considered the motion: This house believes that real innovation using ICT in healthcare delivery is driven by clinicians rather than informaticians.

Innovator Simon Dodds — a consultant vascular surgeon and qualified computer scientist — argued that clinicians are the drivers of innovations in healthcare delivery. Mark Outhwaite, formerly Director of the Technologies in Health Group of the NHS Modernisation Agency and now of Outhentics Consulting, seconded him.

Ian Herbert, a consultant healthcare informatician, supported by Colin Jervis of Kinetic Consulting Ltd, took the position that it is, in fact, informaticians that drive the innovations in the delivery of healthcare involving ICTs.

The following is a condensed transcript of the arguments put to the audience, 67% of whom voted in favour of the motion at the debate's conclusion. At the start, 82% were in favour of the motion.

Simon Dodds: The first place to start really is to consider what one means by 'real innovation'. 'Innovation' just means doing something new. It doesn't mean inventing anything. It just means using something that is already there in a new way.

Real innovation in healthcare is stuff that works, which means it's become adopted, it's becoming embedded and, therefore, is successful. I don't mean innovations that don't work.

So who drives it? Well, the people who drive innovation are called innovators; and what and who are innovators? Everett M Rogers [a professor of communications at the University of New Mexico, who has analysed and written about innovation] says that about 2% of any population are innovators. It is a critical 2%, because it's the 2% that starts the ball rolling.

I searched on the Internet for the characteristics of a successful innovator; who had the best qualifications? There are a number of parameters I could use, but I'm going to cover several of them.

The first one is the ability to feel the need to change. Whose need are we talking about? Well, it's the patient's need. It's not the needs of the clinicians so much. It's certainly not the needs of the informaticians. It's the needs of the patient, and who better to feel the needs of patients than patients themselves and the clinicians who deal with them on a day-to-day basis. So, it's their job.

Second point: innovators are able to create the environment that fosters innovation, and that means the clinical team because, at the end of the day, healthcare is delivered by people to people. Senior clinicians are by definition healthcare team leaders. We have to be. We are coachers; we are trainers; we are, in a sense, role models, and so who are better placed in the team to create the environment in which innovation can happen?

The third point is that innovators have to be confident enough to ignore the people who say, "No. That's never going to work — no, no, no". I don't know how many consultant clinicians you've met, but lack of confidence is not usually one of their problems. If you think about it, patients expect clinicians to be confident. Who wants to go to a doctor who doesn't feel very sure about what he/she is doing? Whether they know what they are doing or not is not the point, they have to look as if they know what they are doing.

The fourth point is that a good innovator has to be able to anticipate the reaction of the recipients. You have got to be able

to work out beforehand what is likely to work and what isn't, because you can only try a certain number of things. Anticipating a patient's reaction to something is part of what we have to do every day and, therefore, by being clinicians, we have that skill. So again, it is part of our job.

The fifth characteristic I'm going to raise is that innovators are able to engineer opportunities that allow them to disseminate their ideas. It's not the innovators who ultimately implement new things, it's the early adopters who actually start the ball rolling. This is called diffusion of innovation. By nature, clinicians are a fairly competitive bunch and are motivated by success. We like 'blowing our own trumpets'. So, when we've done something that works and feel passionately about, we let it be known.

> ***"clinicians have the motivation, the means, skills and the opportunity to innovate"***

Clinicians have the motivation to innovate. We have the means and skills, and we obviously have the opportunity to do it because we work with patients on a day-to-day basis.

This all sounds great in theory. What about the evidence? Is there any evidence that clinicians are successful innovators in IT and healthcare? There is: I'm standing here. In 2004, our team won the National Innovation Award for Service Delivery for an IT project using, developing and introducing a telemedicine system. This system is now fully adopted in our local area. It's fully embedded and it's now starting to spread to other areas, and it is a completely clinician-driven system. Then, last year, at this conference, I was awarded the overall Healthcare IT Effectiveness Award for the best use of IT in the NHS, and this was for a process-modelling solution to a clinic redesign problem. It was a clinical need and a problem we had to solve.

Both these innovations have been heard about and are starting to be adopted elsewhere. It's not the prizes that are important, it's that the innovations have actually been successful. Mine's not an isolated case, it's just a useful one.

So I'm afraid you do need clinician innovators. We are small in number — only 2% or so. We are passionate, we are challenging and we are noisy, but you need us.

Ian Herbert: Clinicians are without doubt a special breed and, of course, amongst clinicians, surgeons a very special breed. We all know that, and my worthy opponent is of course a surgeon. I say no more. Surgeons are noted for their eccentricities; hopefully, for their competence; and they are natural leaders — and they do exercise these powers to some effect, as they should.

Let us now consider system developments and innovation in general. There is no doubt that clinicians own the requirements for innovation. But there's a lot to be said for an outside view of the game: the insider has his practice; he conducts himself as he does; he has a well-ingrained mode of behaviour; and sometimes, just sometimes, he gets a degree of tunnel vision. So there is a case for looking from outside clinical practice for some innovations. So that's one point.

The second point is that clinicians undoubtedly do the work, and they, therefore, 'own' the requirements for innovation. In some cases they will go further: Simon is extremely unusual in that he has a computer science degree. There is a difference, though, between owning the requirements and actually designing, developing and implementing a new system. When it comes to design and production, sometimes clinicians overreach themselves. I remember one case where a systems supplier took over a product from a company that had been developed by clinicians, and when he looked at the coding side he thought he'd bought a 'pup' because it wasn't very professional. Now that's not an argument against clinicians innovating but it does mean there are limits for many folk. I don't do brain surgery, and I don't expect that the average nurse or GP would produce a good database design. They might, but they might not. If it has to be optimised and finely tuned and maintainable, I definitely wouldn't expect them to produce code that I would want to live and work with for the rest of my life. So 'horses for courses' are essential. That's how we progress.

Much of the success of primary care computing is due to the fact that many of the earliest developers were GPs. They knew the business and, on the whole, did a pretty good job. But also in the old days, there were successful systems that weren't developed by GPs — mine was one of them, but I worked with GPs. I wouldn't dream of doing otherwise.

> ***"the best innovations are a result of teamwork"***

Actually, the best innovations are a result of teamwork. For instance, one of the keys to innovation is being aware of what's possible: being aware of what technology can offer you and what is possible in terms of software, hardware and all the rest of it. Keeping up with the new tricks and the new devices is our business. It means we are in a position to say, "Ah! If you want to do task x then actually this technology, this approach could be very beneficial, could be very useful". A good system designer would never dream of working without the users and their requirements. That would be extremely foolish.

We know that systems, to be implemented in a working environment that is dynamic, complex, (very complex in some cases) and very much about human interaction and relationships, have to be very carefully designed. You can't do without the clinicians. But there's no reason why clinicians and healthcare informaticians working together cannot be effective innovators. Healthcare informaticians very rarely produce innovations on their own but, if they do, almost always, there's a good clinician adviser in the background.

Mark Outhwaite: One point I want to make is that what we are talking about here is the whole range of clinicians, not just doctors, and not only the full range of clinicians that we know about now, but the full range that is likely to develop in the future as a result of innovating new ways of working using technology. And we are not talking about just what's happening today and what was happening yesterday, we are talking about new roles.

I shall talk very briefly about three operational levels. I want to say why clinicians should be involved in ICT use and innovating with ICT.

We need to ask ourselves, 'Why is it important?' If we do it uncritically, we won't actually think about the best ways of engaging clinicians and ensuring that they are given the ability to innovate.

First, the clinical microsystem level, where there's interaction between patient, clinician and technology. Why do we want to involve clinicians there? Because, actually, what we're talking about is profound change in the relationships between clinicians and patients and technology. Particularly in telemedicine, technology allows clinicians to do different things with patients. It's not just about medical technology, it's actually about separating the clinician and the patient. The technology and the patient have different relationships with the clinician with remote care and there's a different set of opportunities.

Clinicians direct the relationships between themselves and their patients, and it's only clinicians who can really begin — in the full light of understanding what's possible with ICT — to think about what's now possible and how they can deliver care differently within the context of the new environment. It's a fast-changing environment and, indeed, an environment where expectation is changing very quickly. It's also clinicians — the very brave ones — who can begin to question at that level exactly what their job is, and whether it does or doesn't need to change. Only they can do this. The clinician engaging with the patient and using technology is what makes patients better, not managers. And what makes patients better is really important.

> ***"the clinician engaging with the patient and using technology is what makes patients better, not managers"***

The next level is organisational process. We all know that, unless you've actually thought about the processes, you are potentially going to embed old ways of working in new technology. Medical practice is extremely complex, and unless we actually understand what we're putting inside the 'black box', all we're going to do is speed ourselves into disaster much faster than we might otherwise have done. So, why is clinical involvement important in this area? It's important, because we're asking them to think about new ways of working and new processes at an organisational level, with new sets of relationships that ICT enables our clinicians to use: new sets of relationships with other clinicians and new sets of relationships with patients, as well as about where care is delivered. So we're also looking at clinicians being involved in the innovation process. We've got to do that; without that communication we're going to end up with just a simple mess.

The final point about clinical engagement is about the national leadership level. A very good example is from Peter Cochrane, who wrote in *Silicon online* magazine that he went to a very big firm's open day. It was for recruiting graduates and MBAs, and they all came. The chief executive stood up and held forth about structures and standards and policy. Not a question was asked at the presentation. Afterwards at the reception, however, the audience wanted to discuss workstyle issues such as mobility, working from home and virtual teamworking. The senior management of the company could not handle that discussion. They recruited none of the audience. So what we're actually saying is that when we have new standards and new people coming through, the real importance of clinical engagement is that we've got to mature the leadership level to be able to respond to the new expectations.

Colin Jervis: For 15 years I've been in promoting and implementing healthcare IT, and recently I got an email from someone called Jeanette — a former nurse, who now works for one of the LSPs — which has changed my mind about the shared EPR. She sent me some examples of clinical innovation and patient notes, and I now think that implementing SNOMED CT is no longer a good idea. Here are three of them:

- "On the second day the knee was better and on the third day it disappeared";
- "Discharge status: alive but without my permission"; and

- "Patient had waffles for breakfast and anorexia for lunch."

Healthcare, I think, is heading for a period of 'anorexia for lunch'. It's going to be short of cash and short of qualified staff, and a changing workload due to changing demographics is going to bring in a great preponderance of chronic care. Never has healthcare needed ICT innovation more.

> ***"clinicians innovate with care, informaticians innovate with ICT"***

The motion sets clinicians and informaticians in competition in the innovation game. Of course, the truth is that both of them contribute to healthcare as part of the multidisciplinary team. So, ladies and gentlemen, the proposition I want to make to you is: clinicians innovate with care, informaticians innovate with ICT.

Innovation is not the same as inspiration.

Clinicians specialise in care. There is no doubt about that. They spend years in training, years in practice, and surgeons wouldn't appreciate my going into the operating theatre and telling them how to innovate in the removal of an appendix.

I spent 15 years learning my trade and that's not just learning which plugs go into where, it's about how to engage people, how to inspire people and, yes, on occasions as an ICT person, delight users. I have done it. IT innovation is about knowledge of IT, its potential and its implementation. That takes time.

So I've dealt with depth but we also need breadth so that brings me to my second point.

Clinicians have developed worthy specialist systems and in my time I have come across the vascular systems developed in Access, the cardiac systems developed in Database III — all worthy systems, but all sharing a common quality. They are all standalone systems. They don't connect up to anything. They don't connect to each other. They don't share information.

The future of healthcare is patient centred and therefore demands innovation and integration across organisational and disciplinary boundaries, and I suggest that informaticians are in the best position to provide that because they deal with everything from PAS to PACS, from portering to pathology and from networking to knowledge management. Healthcare of the future needs integration across all disciplines and the whole of healthcare, not just part of it.

It was an informatician who created the ICT innovation that's likely to change healthcare more than anything else in my view and that is the Internet, the most pervasive ICT tool you have ever had. The balance between the provider and the patient is going to be altered inevitably and inextricably by the Internet. People are going to go online to find out about their self-care, they are going to go to the self-help groups, they are going to have access to exactly the same information as clinicians. So ICT innovation is also about delivering the cure.

Anyone can have an idea, but innovation is not about ideas, it's about the delivery of ideas, and increasingly clinicians and patients will inspire the delivery of ideas but it's the informaticians who will deliver innovation.

'Cyber' is ancient Greek for 'steering'. It's the informaticians who steer, support and help to provide the navigation between these isolated islands of care and join them all together because they integrate ICT, they understand ICT and, crucially, they deliver ICT.

The crisis is 'anorexia for breakfast'. Healthcare is dotted with data and stores of information and it's informaticians who will sort that out.

[The debate was then opened to members of the audience and, following summaries of the points made for and against the motion by the opposer and proposer, the concluding vote was taken.] ■

Hot-air balloon

A man in a hot-air balloon realised he was lost. He reduced altitude and spotted a woman below. Descending a bit more he shouted: "Excuse me, can you help? I promised a friend I would meet him an hour ago but I do not know where I am."

The woman replied: "You're in a hot-air balloon, approximately 30 feet above the ground. You are between 40–41 degrees north and 59–60 west."

"You must be an NHS manager", said the balloonist.

"I am", replied the woman. "How did you know?"

"Well", answered the balloonist, "everything you told me is technically correct but I have no idea what to make of your information and the fact is, I am still lost. Frankly, you've not been much help at all. If anything, you've delayed my trip."

The woman below responded: "You must be a consultant."

"I am," replied the balloonist, "but how did you know?"

"Well," replied the woman, "you don't know where you are or where you are going. You have risen to where you are owing to a large quantity of hot air. You made a promise which you have no idea how to keep, and you expect people beneath you to solve your problem. The fact is you're in exactly the same position you were in before we met, but now, somehow, it is my fault."

Annonymous