

**CHO Seminar #4. Dr Brian Richards, National Director of E-Health Implementation, and Dr Anni Dugdale, Lecturer in Sociology at Canberra University.**

**Dr Brian Richards**

A couple of months ago I suggested to Health Minister Tony Abbott that in talking about HealthConnect he could refer to the second law of thermodynamics (the law of entropy) which describes how in nature all things tend to disarray - the application of energy is required to create order out of chaos - because that's what we're doing in e-health: working hard to achieve an efficient, ordered health system.

My background is in General Practice - I was a GP in Canberra for about 20 years. My interest in E-health (the application of Information Technology in health care) was actually driven from my experience as a GP. I found that in trying to look after patients - dealing with the uncertainty of trying to manage patients through the health system - I constantly came up against barriers in the system to continuity of care, many of which related to the timely flow of information.

My initial interest in health system reform was related to health services reform. More than 20 years ago I became involved in getting better organisation of GP after-hours services for the ACT health system. I subsequently became involved in the AMA, and in the late 1980s I was elected ACT AMA branch president.

At the time we were debating the consolidation of public hospital services between the then Canberra and Woden hospitals. I then became further involved in health services reform through the development of Divisions of General Practice - I established the ACT Division of General Practice and I was its CEO for about seven years before I was recruited to work for the Commonwealth Government about six years ago.

For most of that time I have been chief information officer at the Health Insurance Commission, the statutory authority that administers Medicare, the Pharmaceutical Benefits Scheme, the Organ Donor and Childhood Immunisation Registers. HIC had a specific agenda of extending its role from being a health financing agency, and moving its strategic orientation towards supporting information management in the health system.

Many of my GP colleagues (including my former partner in general practice) are heavily into IT, and some time ago I realized the opportunities available from applying IT in the health sector as a tool in achieving strategic health reforms. I started to get more actively involved in IT issues in the 1990s - I helped establish the GP Computing Group and was a member of the National Electronic Health Records Task Force to mobilize interest in the use of information technology in health care.

A good reference point in this context is the Intergenerational Report put out by the Department of Treasury a couple of years ago which assessed the impact of current fiscal and policy settings on the next generation of Australians: what is the impact 40 years out on Australian society? Can we maintain the standard of living if we continue to do what we are currently doing?

The Intergenerational Report pointed to not only the ageing of the population but also to the growing burden of chronic disease. It concluded that in 40 years' time, if we continue to do

things the way we are currently doing them, we will not be able to have the same standard of living as we currently enjoy. GDP will be falling. We need to start addressing these issues now. This report pointed to potentially unsustainable health expenditures, specifically pharmaceutical benefits but also other health programs, and the very strong message was that we need to be smarter in the way we manage health services and we need to understand more about the systems underpinning health services.

Because of the advances in medical care, people aren't dying young of acute illnesses, they're living longer with chronic illness. The way in which the health sector has been responding to the increasing burden of chronic disease is by developing new models of care such as multi-disciplinary care teams. Nowadays if someone has diabetes, they do not expect their GP to be their diabetes educator, podiatrist, dietitian, endocrinologist, ophthalmologist, pathologist and their GP. They expect a team of people to each bring their skills to get the best outcome for them as a patient. Underpinning these newer team-based models of care is a need to share information and to have that information available at the point of care.

There is a huge explosion of information. In the last ten years there has been more medical knowledge made available than there was in the first fifty years of the last century. The amount of information that health care professionals are meant to have at their fingertips when making clinical decisions is growing exponentially. Not only do they to decide about the disease process itself, but about how to diagnose the disease accurately, about how to treat the disease effectively, what tests to order, what drugs to prescribe, and to which services to refer the patient. You have to have all of that information available to provide advice and make clinical decisions, but also you need to know all about that patient and their personal or family situation, including what sort of work they do. How we expect clinicians in that sort of environment to be able to synthesize all of that information without the use of technology is really beyond my comprehension.

Minister Abbott at the recent Health Informatics conference gave a speech which has been widely reported. He basically wondered out loud whether in the foreseeable future the medical profession would start to regard the proper use of information technology by clinicians as being a fundamental tenet of proper clinical practice in terms of standards of care (whether it's professional standards, practice standards or accreditation standards). Minister Abbott was throwing out a challenge to the profession saying that surely in this day and age, the way in which health services are evolving the proper use of information technology is becoming a professional standards issue.

So as we move from traditional models of health care towards more contemporary models of health care, moving away from episodic care towards a continuum of care, we are moving towards a more complex system with an increasing reliance on a whole range of technologies. All of this has impacts on the way we manage and support the health system to cope with these changes.

When I first started practising medicine, my clinical notes were an aide memoire only for myself. Whether I kept the current medication summary in my head or in on a piece of paper didn't matter because I was the only one using it. By the time I left my general practice five or six years ago, I was no longer a solo GP, but one of a number of part-time practitioners sharing the care of the patients attending the practice. The clinical notes had become the primary means of communication between the different doctors who may be seeing the same

patient over time, and both the content and the format of the clinical notes had changed to fulfil this function.

As part of the information revolution, the information asymmetry that used to prevail (in which doctors had all the knowledge and patients had little choice but to accept their advice) has been addressed by the ubiquity of clinical information on the Internet. Better informed consumers can engage with their doctor in a discussion of care options. Such a doctor respects and promotes that patient's autonomy and their right to make their own decisions based on the doctor's advice. Treatment decisions should be made by the patient, not the doctor.

For effective clinical decision-making, information needs to be shared. For information to be shared, the infrastructure needs to be in place that allows clinical information to be properly managed. An American paper published this year talks about four levels of information interoperability. Level one is where there is no electronic interoperability of the data, such as when a piece of paper arrives or we get a bit of information relayed over a telephone call. Level two is where you start to use machines to actually transport the data from point A to point B, such as a fax machine. Level three is where machines can start actually organising the data but can't manipulate it or do anything with it but can at least present it in an organised, structured way. Level four interoperability is where the applications you are using with the technology actually handle the information and support what you're doing and *that* is where you start enabling features such as electronic decision-support. Some other work coming out from the States shows that level four (which is often called "semantic interoperability") is actually cheaper than level three interoperability.

There are a number of steps that need to be taken to realize the full benefits of e-health.

The first step is to agree on the standards that all health sector participants will use to record and share information.

The second step is to have the data in a digital form at the point of care. Instead of writing notes on pieces of paper (from which at some point someone has to transcribe that into an electronic form to be shared), a cultural work practice change is needed so that clinicians have a clinical interface with which they actually enter the data into a structured clinical record which is in an electronic form. Once you've got the data in the digital format at the point of care you can then do a lot more with it.

The third step is to communicate information electronically between health care providers (and the patient), such as discharge summaries, pathology results, referral letters etc. I refer to this as 'point to point' messaging.

Point to point is a replication of the way the system currently works. For a person requiring multi-disciplinary care there are a number of parties who need to be involved and you have to remember to send a copy of certain information to the dietitian, the podiatrist and the physiotherapist. The HealthConnect strategy is based on a web services model where the information might be sent directly to one point for medico-legal or clinical reasons but also is made accessible to other members of the team, so there is combination of 'push' and 'pull' technologies.

The fourth step therefore is a shared repository of health information, accessible by all relevant providers involved in the care of the patient, with that patient's consent, and by the patient themselves.

The 'proof of the pudding' will be the difference it makes to a patient's health care experience, both in terms of the process and outcome of care.

When looking at the clinician/patient interface I talk about the e-health iceberg. What you see above the surface is the health care interaction between a patient and their health care provider(s). However, for any movement of the tip of the iceberg to occur, there is a big mass of activity that needs to occur under the water.

The base of the iceberg is the set of standards that permit interoperable information systems across the health sector. This is where NEHTA is focusing its activities. The next level of the iceberg is the IT infrastructure that needs to be in place, which requires investment by health service providers such as hospitals, general practitioners, pathology companies etc. Above that are the software applications used by health care providers, which produce the efficiencies through better information management. Only once all that is ready to move, will we see movement at the patient/provider interface. But even then, there are cultural and workflow or work practice issues that need to be managed to make a real difference to the patient experience.

Now a lot of that is happening at the moment. The National E-Health Transition Authority (NEHTA) was established by all health ministers last year and is charged with specifying standards that will be adopted by all jurisdictions for e-health initiatives, and that work is going in a very accelerated way. NEHTA is not a standards development body; it doesn't take on the job of developing the new standards. There is a huge amount of work that has been done in the standards environment and whenever you see the word "standard" you see an "s" on the end because there are always several to choose from! NEHTA's job is to specify which of the existing standards we will go with in Australia and obviously they have an eye to the international market because a lot of the software we use comes from multinational companies.

In the private sector it is the individual practice or company that is involved in supporting itself with IT systems, and in the public sector it is the State or Territory Governments that need to put IT infrastructure in place. Most of the state and territory governments are in the process of upgrading their infrastructure and have already appropriated significant amounts of money to renew this infrastructure in the public hospital system, and to enable interoperability. There are estimates that there is around about \$1 billion currently appropriated through state and territory budgets for refreshing IT infrastructure.

The real strength of the NEHTA process is the commitment by all the jurisdictions, all the states and territories as well as the Commonwealth, to require the use of those NEHTA standards in any government-funded IT procurement systems.

However, it is not all about technology. E-health implementation is fundamentally a change management process. The focus is not just on the technology for technology's sake, it's around better use of information to improve better health outcomes and the degree to which technology can improve the efficiency and effectiveness of health care.

HealthConnect is about facilitating a nationally uniform approach to achieving health information interoperability. It is very much an organic bottom-up model rather than a bureaucratic top-down approach. There's a strong emphasis on change management to recognise the complexity of the sector and the resulting complexity of the change process.

Ultimately, health care is an information-intensive industry, and health care reforms can only move forward with better information systems so that health information is available when it is needed to make decisions.

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