

Can lean save health care?

Professor David Ben-Tovim, Director Redesigning Care at the Flinders Medical Centre in Adelaide, South Australia, talks to Alan Mitchell about his experience applying lean to health care.

David, you are a pioneer when it comes to applying to health care. How did you get into it?

We are a medium-sized teaching hospital in Adelaide, and we found ourselves struggling with an absolutely critical problem delivering safe care. Our emergency department was so congested that it was an unsafe place to be. Patients were waiting an unacceptably long time to see a doctor, and we were starting to have a worrying increase in really serious adverse events. We hadn't been sitting on our hands. We had tried everything that was common practice for dealing with this kind of problem. But nothing that had been tried had had a big enough effect to really help us out.

We were desperate. Then we came across process mapping on the web. It seemed like a good idea. Di King, the head of our Emergency Department – a visionary – said 'Yes'. So the next Monday we gathered together a large group from our Emergency Department and said 'let's try it'.

What did you do next?

We started right at the beginning, mapping from the moment patients arrived at the glass doors at the entrance to the emergency department, right through to the patients getting up to the wards or leaving the department.

We involved everybody: porters, nurses, clerical staff, junior doctors, senior doctors, and so on. The mapping was incredibly revealing. Lean laboriously re-creates a patient eye view. As we worked our way through, we saw what we had been doing to our patients and ourselves in a way we hadn't seen before. It was like, 'Good God! No wonder we are in a mess! Is that what we do to people? It **** awful'. It was a revelation. People felt mortified; and embarrassed.

This deepened our conviction that we needed to change, though to be honest, at that moment we didn't know what to do.

So what *did* you do?

Well, we sought advice from people like Ben Gowland then at the UK's NHS Modernisation Agency. At his suggestion, we visited a small number of emergency departments in London, and when we came back, we decided to completely restructure the way the emergency department worked. Di King argued that there was no point going for anything small. We had a big problem and we needed a big change.

We created two streams of work: those who the emergency department could deal with themselves, and those who needed to be admitted. And we separated their processes.

Australian Emergency Departments are dominated by Triage times. Each patient is put into one of five urgency categories at triage. There is a time to be seen specified for each category; one minute, ten minutes, half an hour, and so on. You have to report how often you make your first assessment within the allocated time. Unfortunately, in our department, patients in a low, less urgent, category often waited for hours, because just as they were about to be seen, a patient in a more urgent category would arrive and push them back in the queue. Yet as the chaos deepened, fewer and fewer patients were being seen within their Triage time anyway.

So we decided that for the sixty percent of patients who were going to go home from the Emergency Department, triage times were often a bit irrelevant, and we were not meeting them anyway. So provided there was no threat to life or limb, we would treat those patients on a first in, first out basis and make the whole process much simpler. This cut out much of the complicated decision making as to whom would be seen in front of whom, and simplified the process. We were able to tell the patient where they were in the process. Because we had all shared the mapping process, all the staff was prepared to change their practices: each group was willing to cooperate. (When it is the patient's interest that is being focused on, a lot of the argy-bargy goes away).

And what happened?

It worked *that day*. It had an instant effect. Splitting the patients into two distinct and identifiable groups, then managing each group separately instantly brought calm to the department. At first, people assumed it was just a quiet day, but the improvement was sustained. It was a conversion experience. It showed us we could do it. It convinced us 'there is something in this Lean stuff'. And it didn't cost us a penny. There were no money issues. No budgetary approval. We didn't restructure anything. We didn't introduce any big IT. So we decided to give Lean a serious go. Interestingly, the people in the Modernisation Agency had all told us to read Lean thinking, but they never acknowledged the importance of Lean Thinking in what they were doing. I think there were nervous that talking about a system that got started in manufacturing would make doctors and nurses a bit anxious. I must say, we have not found it to be a problem. We just say this is all about organising complicated things, and why not borrow ideas from other people who do complicated things too. Why invent it yourself, when we have got enough to do getting the clinical stuff sorted out.

Two years later as Lean has been brought in all over the hospital, we are managing to do up to 15% more work in adult services (we haven't

started on childrens' services yet), to offer a safer service, using the same infrastructure, staff, and technology. This year, we are coming in below our budgeted costs, and for the first time in years, we are able to invest some of our 'profit' in much needed equipment. We have increased the speed of patient flow through the system and reduced the work load for staff. We are much more cost efficient, though that is almost a by-product. Who would have imagined two years ago that we could take on all this extra work and not go under?.

In fact, everything has improved: cost, quality, delivery, service. We didn't set out to 'improve quality'. But quality has improved, almost accidentally.

By tackling waste we released resources, and when I say 'released resources' I don't just mean money. It's about morale too. The staff often feel frustrated about how things are done; about what happens at work. They use different words to describe it, but often what they are frustrated about is waste. So when you tackle waste, they feel good.

Before, we simply did not have any sense of being in control. Now the institution as a whole is much more optimistic. And gross errors are being squeezed out of the system. One result, for example, is that the number of notifications (where the hospital gets involved in litigation for errors that caused death or disability) has fallen dramatically from 87 when we started to 32 last year. And many of these notifications are coming from areas of the hospital we haven't reached with lean yet.

There's an important theme here, by the way. Currently, in hospitals generally, one in sixteen patients suffer from a serious error caused by the hospital. Four per cent of these errors kill the patient. Statistically speaking, going through the health care system is more dangerous than parachuting off a high building. Yet, I – and all my colleagues – try very very hard to do a good job! We just work in a system that makes it hard to get it right, and easy to get it wrong.

Of course, our transformation has been messy. Some of it has been unsuccessful. That's partly because we set out to transform many areas all at once and we didn't know we couldn't do that. Nobody told us. But basically I now believe lean thinking can save health care.

You say some of it has been unsuccessful. Can you give us some examples and explain what went wrong?

There was one clinical group treating high volumes of patients that we thought could be standardised. New patients arrived every day. People knew what needed to be done, but when we investigated the sequence, we found we just couldn't get it to go right first time every time. We couldn't make it work.

There were certain steps that every member of staff in the Emergency Department had to have the ability to do, but the machines involved required a lot of expertise and were not user-friendly, and needed training that was not always easy to deliver, because we have a number of temporary and part time staff. So we had a lot of error and re-work. And that was just the start of the patient journey; it was the same story as the patient progressed through the hospital. But when it came to it, the key process owners basically said 'There might be problems, but this is still better than most people do this, and the problem is not life threatening anyway, so we don't want to make a big effort to make it better'. We learned that if there is no burning deck, don't bother!

So in this case, we made a significant effort and it was not successful. One day we'll go back to it, and try again.

Hospitals have to deal with a number of issues simultaneously: communication, emotion and trust, waiting times, variability, quality control. You have to try to address them all. And sometimes, that ain't easy!

So, in those areas which didn't work, you failed to get the 'buy in' of key people?

Yes. That is one of the things we have learned. You need to get everyone involved – at all levels of the hierarchy, to create a shared, joint view of what is going on. And if someone can stop change occurring, then that someone needs to be round the table. This is very important because, for example, in hospitals doctors find it hard to listen to anyone else. If they want to, doctors can stop things from happening. And we need them on board. There was a danger, that if it had been nurses only we wouldn't have had buy-in from the doctors.

As we have progressed with lean, over and over again we have found that it's people's experience of doing the mapping together that deepens their conviction about what's wrong with the way we work now, and generates agreement to have a go. People accept the need to change. For example, there have been many changes to the way people work over the last two years, but so far, we have had no industrial action. And the relevant health unions are all pretty strong in our area. We think it's because everyone can see why we are making the changes, and why they make sense.

So we work hard to make sure that everybody's voice is heard, that there is no hierarchy, and that there is no culture of blame. It has to be about respect. Our basic assumption is that people want to do a good job, and that we have been making it impossible for them to do a good job. We use humour, for example, because it is very important to make people feel OK about having their deficiencies exposed.

What other things have you learned?

Well, the mapping process is fascinating for people. They see things they never saw before – and they all see the same thing. For the first time. And everybody agrees. In fact, it's almost too fascinating. We had to create an issues board at each mapping where we write down all the issues

that come out and have to be followed up. Without that it would start degenerating into a cross between an out of control anger management session, and basic counselling. But we work hard to ensuring that people go away feeling listened to. As a philosophy, respect for people works. So doing all the set-up, preparing the ground rules, is very important. Mapping and implementing Lean interventions is a big communal process. It is a bit chaotic. But we are all focused on creating 'the perfect journey' for the patient, not on each silo doing its own 'perfect job'.

The fact is, professionals are very good at the specific things they are trained to do but the rest of the process of care, the bits they don't do, is often invisible to them. No one 'sees' the whole process from beginning to end. We all focus on the bit that concerns us. The basic proposition in health care is that practitioners need to be competent at their competencies but. much of healthcare – all the stuff that goes on behind the scenes – is invisible to the patient. It is about moving knowledge and information, not patients, and because it's invisible, it is easy to get it wrong.

So overall, what this means is that *nobody* is competent when it comes to the end-to-end process. For us that was the revelation: mapping the whole sequence so that every step was visible to everybody made it clear that on a day to day level, care processes are often extremely complicated and have no one taking responsibility for the whole flow. No wonder it is easy to get things wrong. To reach this level of understanding, as I said, we had to involve people from every level; clerical staff, nurses, porters as well as doctors and administrators.

One of the breakthroughs was understanding value streams, which are not the same as clinical specialities. We use the term value stream to describe the end to end process of caring for a patient-care-family whose care processes have enough in common for them to be managed together, irrespective of clinical diagnosis or existing professional boundaries: short things, long things, simple things, complicated things. Our concept of a value stream brings together the usual lean meaning of

value stream, the end to end process of production of a particular product, with the notion of product (or in this case patient care) families.

Our experience is, if a group of patients have care processes in common, then we can do something. For example, we developed a short stay (twenty four to seventy two hours) medical and surgical emergency admission ward, in which medical and surgical patients were treated together, irrespective of diagnosis. It turns out that for emergency patients who have such short stays, many of the care processes involved are pretty similar. By improving these processes we freed up enough capacity to give the complicated work the time and attention it needed.

Another big change was 'ward pull'. Hospitals are filled with push systems, but pull makes people more responsible. With 'ward pull' each ward decides who will come into the ward. What tends to happen in hospitals is that responsibility for which patients go where is devolved to a bed manager, who tells each ward which patients they must have. We changed that to letting wards pull those patients that fitted their profile. What we're trying to achieve is the right patient to the right ward at the right time.

To do this we needed to develop standardised operating procedures around each sequence. Common processes. So, for example, the ward clerk acts as a sort of human kanban card, meeting with the ward clerks from areas where patients tend to wait in the queue for a bed (the emergency department and intensive care) saying 'we have three beds available, is there anyone suitable'.

Finally, to improve flow we had to identify error and handle variability.

So when you start out and say, 'we are going to focus on the work people do', don't people feel defensive? How do you present the idea at the very beginning? Did you say, for example, that you were trying to do 'a lean transformation'?

People in health are reluctant to use the jargon of lean, because the jargon suggests it is something for manufacturing alone. But we were very upfront that we were borrowing the ideas from manufacturing. We use the language of lean, but with health examples. This didn't create resistance. To the contrary, it helped people recognise that this wasn't just coming out of the blue. It had its origins. It had been tried and tested. It has a logical basis. And we talked about the principles, about the purpose being to add value for patients.

So what would your advice be to people in health starting out on a lean journey? Where do you start? It is a matter of waiting for the CEO to say it's a good idea, or can you start small?

If the change that's needed is at the level of one particular service or department it can be done within that service or department. But it's only possible to have system change with senior leadership. It's a sliding scale.

We were lucky. We were able to work across every area of the hospital because I was the team leader and I was already part of the corporate executive. For us, the CEO's continuing and visible involvement is a signal that this is a serious process. If big change managers are not at the table – if they are out of the loop – change will be ineffective. If as team leader you have to report to a senior executive, rather than being an executive, then your sphere of influence is reduced.

On the other hand, there's always a risk that the CEO assigns lean to some sub-group and it becomes 'just another quality group'. Then people say, 'we did lean and didn't help'. Lean requires vision: seeing with different eyes. You also have to accept that it is a long-haul. It has to be *the* method. It can't just be a tack on.

Another thing to remember is that everything we did was funded internally and internally instigated. So there was no tortuous process of reporting, approvals and so on. That enabled us to work much easier.

OK. So you started on this about two years ago. How far have you got? Is there any danger of running out of steam?

I think we are only at the middle of the beginning. We still haven't touched some parts of the hospital and there is always a conflict between going deeper into existing areas, or moving on to new areas. You have to decide your priorities.

I think we need a formal system for returning to things we did, to look at them again, and to keep on improving them. When I look at how dangerous and wasteful hospitals are, I think in industrial terms we are Wright Brothers compared to a Boeing 747. Getting there requires constancy of purpose.

Also, as we go along, new issues arise. For example, at the moment we have a mismatch between work processes and reporting structures. We have stayed focus on the value streams, but our management structures don't match this. Now we have to align management around value streams.

By the way, that is the complete opposite of starting out with some restructuring. Whatever you do, don't start with restructuring. The difficulties don't lie in who gives the orders. It's actually doing the stuff that's difficult. It's the work that matters, not the management. Changing reporting lines doesn't change the actual work. Lean is about getting the work done. It's not about making brilliant decisions; it's about doing basic things right, communicating well, and so on.

So, looking back on your experience, what would your biggest message be?

I said it earlier. We have found that we can do 15-20% more work, offer a safer service, on the same budget, using the same infrastructure, staff, and technology – and with improved staff morale. And we have only just begun. I really do believe that lean can save health care.