



# CODE RED

**AN INNOVATIVE LABELLING SYSTEM DEvised BY A BRISBANE PATHOLOGIST COULD REVOLUTIONISE PATIENT CARE AND SAVE HOSPITALS MILLIONS, WRITES KELLIE BISSET.**

It's a disarmingly simple idea: prevent urgent pathology results from being 'lost in the system' by colour-coding the specimen containers with red stickers before any samples are collected.

But up until now, no-one has thought of it, despite a national average failure rate of urgent pathology samples of 10–15%.

That's as many as one in every seven hospital patients who don't get their urgent pathology results within the clinically agreed timeline of 60 minutes, according to the Australian Council on Healthcare Standards. But in some state public hospital systems, patients fare much worse, with failed delivery targets as high as 55%.

And that's just not good enough, according to Dr Andrew Francis, Director of Pathology for the Prince Charles Hospital Laboratory Group, Pathology Queensland.

"If I was the patient having a heart attack, would I be happy to wait an extra half an hour to two hours on the trolley?" he says.

"I am passionate about patient care. I did medicine because I care about people who are sick and if I was on the trolley I would want my results quickly."

## **A timely intervention**

Dr Francis is the brains behind FASTPaTH, a colour-coding system for blood sample tubes and a redesign of the

pathology process, which has been shown to reduce the length of time patients spend in hospital emergency departments by 20–30 minutes.

This time saving gives Queensland hospital emergency departments the potential to treat an extra 500 patients per day, an efficiency estimated in the order of \$35–40 million a year for Queensland alone.

Dr Francis says this could be an underestimate – and even he was surprised by the results.

Not surprisingly, Queensland Health is interested too.

A trial of the FASTPaTH system was approved in 2005. This trial, led by Dr Francis occurred on the Prince Charles Hospital Campus involving the Emergency Department and the Pathology Laboratory.

And while no mandate has been given to roll out the system statewide, the Queensland Health Innovation Branch provided funding to Queensland Pathology and Dr Francis to present the findings of the trial and expand it to other sites across Queensland. So far, 19 have come on board with at least some elements of the system, but he is keen for wider adoption to maximise the benefits for all.

"We have almost three years of data that has evidence to show [this system] is simple and sustainable," he says.

"We have a duty of care to patients to offer best practice."

International figures for OECD countries show that about 30 million urgent blood test results per year are delayed unnecessarily. Estimates of the proportion of delays with serious consequences sit at between 1% and 2%. So at best, 300,000 people per year in OECD countries will suffer a preventable serious adverse event due to system delays.

"That's the equivalent of at least 10 jumbo jets a week falling out of the sky," Dr Francis says.

"These are ballpark numbers, but it is still a lot of people – and these numbers are optimistic when you look at the Australian Council on Healthcare Standards data."

Despite this, there's no public outrage. And that's because there's no critical mass of patients aware that the problems they've encountered are also happening to others.

"If you could do no more than put [the tubes and bags] in a vending machine and charge patients \$5 they would pay for it," Dr Francis says.

"Our healthcare system does not allow them that choice."

## **Streamlining priorities**

FASTPaTH, which translates as For Access to Speedier Tests – Pathology, is a fundamental redesign of the pathology process.

Before samples are collected, each sample tube is marked with fluorescent





This time saving gives Queensland hospital emergency departments the potential to treat an extra 500 patients per day and could save the state health system at least \$35–40 million a year

## Hospital pathology ordering: a multi-stage process

1. Pathology test request form – ordered electronically or handwritten by a nurse or doctor
2. Collect the sample
3. Label it
4. Package it
5. Physically transport it, either through calling the wardsman or via the pneumatic tube system
6. Someone at the pathology lab must receive it and appreciate it is there and needs processing
7. Sample must be registered on the lab's computer system with information including the name of the referring doctor and where the test has to go
8. Pre-analytical processing is sometimes required (e.g. centrifuge)
9. Sample is tested via machine
10. Scientist may be required to validate the result
11. Result must be transmitted back to the patient

At any of these stages, delay can be introduced. The wardsman might stop off for X rays or other samples on the way to delivering the sample. The lab staff have to notice it's urgent. Sometimes the pneumatic tube system can break down. Or if a hospital staff member is busy and they put down the sample, they might forget it needs to be sent or processed but the colour reminds them these are urgent and important.

“In the laboratory where you have thousands of bags and thousands of tubes, you have to do something first and something second”  
– Dr Andrew Francis



stickers if they are priority one or two, and not marked at all if they are standard priority.

Priority one – or ‘urgent’ – tubes are denoted by a red sticker, and these are used for emergency department patients (such as those with suspected cardiac arrest), and day oncology patients.

Priority two tubes are marked with an orange sticker, and are used for intensive care and coronary care patients and other high-priority clinical areas such as patients waiting to be discharged pending their blood test results. They follow the principle that the sooner everyone knows the results, the sooner the patient can be discharged.

Tubes are also placed in bags that are colour coded: red tubes go in red bags for urgent cases (emergency, oncology, heart attack); orange tubes go in blue bags (intensive care, coronary care, discharge patients and those who suddenly get sick); and the remaining routine samples are placed in clear bags.

“In the laboratory where you have thousands of bags and thousands of tubes, you have to do something first and something second,” Dr Francis says.

“This allows the lab staff at all stages to pick the red bags and priority one tubes first, the blue second and the others later, then if coloured ones come in they start doing the coloured ones.”

And in an era where access block in hospitals is a significant issue, it’s not hard to grasp the widespread implications such a system could have if adopted on a large scale.

But the system doesn’t end there.

Dr Francis who as a private individual has been granted an innovation patent for his work (with further patents pending), has also incorporated other features such as stocking IV trolleys with ready-made kits containing the bags, tubes and pathology request forms. This saves nurses time stocking the trolleys, looking for sample tubes, or wandering around trying to find request forms that they complain are frequently stolen from trolleys by aberrant doctors.

There is also a method of tracking urgent samples, so the labs know urgent blood is on its way and can inquire if there is a delay in arrival.

The beauty of the system, Dr Francis says, is that the instant the sample goes into a container with a red label, everyone knows it is urgent.

“The lab staff think it’s great because it helps them. Anyone walking along can say ‘that’s urgent, it should not be there, I will put it straight on the machine’. It is about the laboratory having a better chance of getting it right first up.”

### **Towards best practice**

In the FASTPaTH roll-out in Queensland involving 19 Queensland public hospital emergency departments, one hospital achieved a 30% improvement in turnaround times just from using the priority tubes and nothing else.

And at the beginning of the roll-out, only three of 10 large hospitals were achieving best-practice turnaround times. By the end, nine had reached that goal.

While the system has obvious benefits, not everyone has been open-minded enough to appreciate them.

To date, governments in other states have shown little interest in embracing FASTPaTH, and tube manufacturers have given a lukewarm response to producing tubes with ready-made red and orange stickers. If manufacturers did offer this service, it would eliminate the need for the additional costs, (covered to date by Pathology Queensland) of labelling the tubes at each hospital facility using local staff or hospital volunteers. “It has been tricky to get people to engage,” Dr Francis says.

“It is obviously good for patients and labs, and for manufacturers the cost is negligible – and they could probably charge a significant premium for it – but they think people buy their tubes regardless so they don’t have to do anything.”

And as for state governments, despite struggling with emergency department access block, “they employ external consultants and come up with their own solutions. None of them have said gee, we really want to take it up.”

Despite the frustrations, Dr Francis has maintained his enthusiasm.

“I may well have given up a long time ago except for the fact that I care about patients and it makes a difference. I am passionate that patients deserve something better.” 🍷