



# A cure for mayhem in casualty wards

## TECHNOLOGY

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SATURDAY nights in the emergency ward of a hospital may appear chaotic as the walking wounded stumble in unannounced, but there is a surprising degree of order amid all that mayhem.

Nurses and doctors have long known broad patterns about the need for hospital beds – demand peaks at the weekend and enters a trough on Mondays – but a lack of confidence in the ability to predict emergency caseloads with precision has hampered their ability to maximise the use of those limited beds.

This has resulted in tension between the demands of emergency patients, who cannot wait, and those of elective surgery patients, who may feel they have already waited too long to be rescheduled.

Now the Australian e-Health Research Centre has developed a tool to unravel the chaos of emergency rooms so hospitals can forecast their need for beds and, potentially, shorten queues for elective surgery.

“It’s like you would forecast the weather, but in this case we are forecasting when patients are admitted to hospital emergency department beds,” says Dr Justin Boyle, a scientist at the research centre, a joint venture between the CSIRO and the Queensland Government.

Knowing the volume of beds required for emergencies makes it possible for hospitals to allocate the remaining beds more effi-

ciently for elective procedures.

The tool, a piece of software conceived by Queensland Health, is being tested in two large hospitals, at Toowoomba and the Gold Coast. They were selected because they represent significantly different populations.

The Gold Coast hospital, which serves a transient tourist population as well as locals, typically gets about 150 emergency cases a day, with about 30 per cent of those being patients needing a bed.

Conversely, Toowoomba, which has a steady population, gets 120 emergencies a day, with only 20 per cent needing a bed.

The head of the Gold Coast hospital’s emergency room, Dr David Green, said the software, called the patient admission prediction tool, would help provide greater certainty for the timing of elective surgery.

“One of the big problems with hospitals ... is trying to fit all the patients,” Green says. “While you can get a sort of plan on the number of elective surgical admissions, it’s been hard in the past to get an idea of how many admissions will be coming through the emergency department.

“You’ve got an elective surgical admission queue and an emergency queue that in most systems just squeezes around the edges according to what’s left, as far as beds go.”

If hospitals can depend on the tool, there is a mechanism to

navigate through the competing needs, he says.

The software forecasts the volume of emergency cases by analysing five years of admissions to the two hospitals. “Despite their random-looking nature, emergency departments are actually quite predictable in many ways. “If that’s utilised by hospitals, then they will reduce the problem ... of getting patients from emergency departments to the ward.”

Whereas previously the need for beds at the two test hospitals could be predicted within 20 per cent, the software has already brought that to about 10 per cent, says the centre’s research director, Dr David Hansen.

In practical terms, that could mean freeing up beds at any given time for five more patients awaiting elective surgery.

Although the admissions data has had all identifying personal information removed, theoretically it still can give advice on other topics, including the severity of individual emergencies.

Hansen said the Gold Coast emergency department was “pretty keen” to use the software in these new areas.

Justin Boyle adds: “The better you can manage that waiting list – and the beds available for that waiting list – the better you can manage the whole health system.”

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