

Sex, SARS, and the Holy Grail

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What each tells us about overcrowding

In this issue of the journal,¹ Fatovich and Hirsch report on the ambulance bypass experience of one hospital in Western Australia from 1999 to 2001. Like in other jurisdictions,²⁻⁴ ambulance bypass has become more frequent reflecting worsening overcrowding in emergency departments (ED). Of particular interest are the insights of ED staff who recorded their perceptions of the main causes of overcrowding at the time an ambulance bypass was initiated. Not surprisingly, the great majority of bypass episodes resulted from excess patient volume, including too many new patients presenting in a short period of time for care, an inability to move admitted patients out of the ED to ward beds fast enough, or both. Other causes, including facility problems, staff shortages, an excess of high acuity patients, or external disasters were much less common.

For physicians working in most EDs in the UK, Canada, or the USA, the fact that Australia is also experiencing worsened ED overcrowding will come as no great surprise. But if a similar problem exists in another part of the world, are the important causes necessarily the same as those close to home? In other words, can we assume that the Australian experience is directly relevant to our own?

ED overcrowding strikes hospital systems, not patients, thus the comparability of those systems is of paramount importance when comparing the problem in different settings. Unlike illnesses such as acute myocardial infarction where predictors like age, sex, or diabetes have straightforward definitions, the predictors of ED overcrowding are largely logistical in origin. The usual causes include patient volume, efficiency of medical assessment, delays finding inpatient beds, nurse staffing, physical capacity of the ED among others. Terminology and definitions vary where they exist at all. Of even greater importance are fundamental differences in the organisation of emergency services, hospitals, and healthcare systems. So, before even considering whether the results in another location are relevant to your own, be sure you are talking the same language.

When I go through this exercise and compare my hospital's experience with that of Perth's, I am struck by some

remarkable differences. Firstly, the setting Fatovich and Hirsch describe is an ED with 55 000 visits per year, a 44% admission rate, and up to 13 doctors and 18 nurses working at any one time. The hospital I work in has an admission rate of 22%, which is high by Canadian standards (more than twice the average rate in the province of Ontario), yet it is only half that of the Royal Perth Hospital. While our volume is a little lower than Perth's, we have substantially fewer doctors and nurses on duty than they do. At its worst, they were on bypass 6.3% of the time one month, whereas we routinely log monthly bypass durations of 40% or more! With these differences, are our two sites comparable? Are our patients comparable? Are admission thresholds comparable? Do we have a more severe overcrowding problem, or do we just hit the ambulance bypass switch more readily than they do down-under?

Can we be more comfortable generalising about causes? The authors were able to quantify the increase in demand associated with bypass: periods in which >10 patients per hour presented for six hours were six times more likely to result in bypass than periods with lower rates. But these results beg the question: when it comes to overcrowding, are all patients created equal? Would 21 young patients presenting over two hours with ankle sprains, lacerations, or corneal abrasions represent the same load on their ED as a similar number of elderly patients with shortness of breath, abdominal pain, or generalised weakness? This is an important distinction, as, if you set out to "solve" the overcrowding problem based on these results, one solution might be to divert patients elsewhere. Diverting patients with minor problems (for example, to outpatient clinics with extended hours) is comparatively easy, but other research suggests these patients may not be such important contributors to overcrowding.⁵ Diverting older patients with complex problems is obviously much more problematic, and potentially unsafe.

Comparisons across countries are made even more complicated by the absence of standard definitions. A whole host of possible definitions for overcrowding have been proposed, many of which reflect completely different aspects of the problem. Many are obviously

of limited use for comparative purposes, such as full waiting rooms or physician stress levels,⁶ while others, such as ambulance bypass, are useful proxy measures, but not adequately standardised.^{7,8} The latter measure also cannot be applied universally, as some hospitals cannot (or do not) divert ambulances, yet surely they do sometimes become overcrowded. Other measures like stretcher occupancy, patient volume thresholds are similarly unsatisfactory, because they do not necessarily reflect on the functional capacity of the ED to rapidly assess and treat new patients.

Some of these definitions are akin to saying a hospital is a building with four walls containing doctors, nurses, and patients. Those conditions are necessary, but not sufficient to adequately define a hospital. Most definitions of overcrowding are similarly incomplete. However, the search for the perfect definition should not become the Holy Grail of ED overcrowding research. It may be that overcrowding, like pornography, remains hard to define, but we all know it when we see it, and are probably all studying more or less the same thing. However, even if this is true, it does not necessarily follow that the causes (and solutions) are as similar in different settings.

One important aspect of the question that Fatovich does not address is the impact on patients. He describes the problem as "a disaster... occurring daily and deteriorating".¹ But is this so? Evidence of a detrimental impact of overcrowding on ED patients is currently limited to surveys, coroner's cases, and anecdotes, and, to my knowledge, no good study has addressed the issue.⁷ The authors also suggest that overcrowding compromises an ED's ability to respond to a sudden infectious disease outbreak or disaster, leading to "increased suffering and excess mortality".¹ However, the real problem with ED overcrowding may not be that it hampers the response to a disaster, but that it can help cause one.

At the time of writing, Toronto is emerging from a dramatic outbreak of severe acute respiratory syndrome (SARS).⁹ The presence of one unrecognised SARS patient waiting for a ward bed in one crowded emergency department in Toronto created the epicentre of a city's outbreak, which resulted in about 250 probable cases (about half in healthcare workers⁹), 36 deaths, over 15 000 people quarantined (including large numbers of paramedics and hospital personnel), hospital and ED closures, and a virtual shutdown of outpatient activity. Yet ED overcrowding was much reduced in the first few weeks that followed because ED patient volumes dropped substantially, presumably as a

result of reduced discretionary utilisation, and because of an increased availability of inpatient beds due to the cancellation of elective procedures. This experience teaches us two lessons about overcrowding and disasters: firstly, EDs may be able to cope with the demands of a sudden disaster as a result of decreased ED utilisation and reduced routine hospital activity. The more worrisome lesson is that the hallway medicine and prolonged waits for inpatient beds characteristic of ED overcrowding may itself contribute to disastrous infectious disease outbreaks.

There is no doubt that the problem of ED overcrowding is international, and that similar causes undoubtedly are at play in different settings. However, the generalisability of administrative research can be limited by inconsistent or non-existent definitions, and by fundamental differences in the organisation of

healthcare systems. Similarly, the applicability of interventions to reduce overcrowding needs to be carefully considered in each setting in which they are proposed. Finally, we should be cautious about predicting how complex systems will respond to sudden and unexpected insults, such as an infectious disease outbreak or a bioterror attack, as the response can be as surprising as the new pathogen itself.

Emerg Med J 2003;**20**:400–401

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