

## Commentary

# Introduction of medical emergency teams in Australia and New Zealand: a multicentre study

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Published: 22 May 2008

This article is online at <http://ccforum.com/content/12/3/151>

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*Critical Care* 2008, **12**:151 (doi:10.1186/cc6902)

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### Abstract

The philosophy behind medical emergency teams (METs) or rapid response teams leaving the intensive care unit (ICU) to evaluate and treat patients who are at risk on the wards and to prevent or rationalise admission to the ICU is by now well established in many health care systems. In a previous issue of *Critical Care*, Jones and colleagues report their analysis of the impact on outcomes of METs in hospitals in Australasia and link this to reports appearing in the world literature.

The difficulty with evaluating an intervention once it has become part of established practice is that, like servicing a car in motion, the method is inconvenient and the results unreliable. Moreover, the intervention is likely to have acquired both adherents and detractors, thereby ensuring maximal uncertainty while impairing individual equipoise. We are left with performing retrospective observational before-and-after studies, relying on large numbers to minimise confounding. This is what Daryl Jones and his colleagues [1] have done.

Outcomes were obtained from the Australia and New Zealand Intensive Care Society (ANZICS) database. From a pool of 172 Australia and New Zealand hospitals, the presence or absence of a medical emergency team (MET) could be determined in 131, of which 84 (64%) had established an MET. Of the 84 hospitals with an MET, 24 provided adequate data to the ANZICS database to determine the number and rate of intensive care unit (ICU) admissions following an in-hospital cardiac arrest, and the proportion of ICU readmissions, one year before and one year after implementing the MET. The comparator group was 16 of

the 47 non-MET hospitals. Comparisons were also possible with some of the hospitals that had participated in the Medical Emergency Response Improvement Team (MERIT) study, the only prospective multicentre cluster-randomised study available [2].

The authors found a reduction in the number and rate of post-cardiac arrest ICU admissions for both the 47 MET hospitals and 16 non-MET hospitals during the two-year period. ICU readmission rates were unchanged, and there was no reduction in hospital mortality for either group. These findings are consistent with the MERIT study, which found that adverse outcomes improved in both the MET and non-MET hospitals. The authors suggest that the introduction of METs has been driven not by evidence of efficacy but by evidence of suboptimal care of acutely ill patients in hospital and an assumption that pre-emptive intensive care would either save lives or permit a dignified death.

How much evidence do we need before making major changes to health service provision? Should we wait 25 years before thrombolysis becomes the established best practice in guidelines and textbooks [3]? Or should we follow Nike's approach and 'just do it'? This was what happened with METs, now referred to generically as rapid response teams (RRTs) [4]. At first sight, the concept would seem to be an eminently sensible response to the problem of suboptimal care of acutely ill hospitalised patients: you take critical care expertise to the patient before, rather than after, multiple organ failure or cardiac arrest occurs. Should we not be doing that anyway? Why do we need evidence that neglect or inexpertise should be replaced by timely competent care?

ANZICS = Australia and New Zealand Intensive Care Society; DNR = do not resuscitate; ICU = intensive care unit; MERIT = Medical Emergency Response Improvement Team; MET = medical emergency team; RRT = rapid response team.

The answer to this question is as complex as the system to which the intervention has been applied. For some intensivists, the MET was an unnecessary intrusion into the service they were already providing. For others, it was a perfect solution to an otherwise intractable problem. Yet others were concerned that it would just shift the burden of illness even more onto a service that could not cope. Ward staff could be positive, or suspicious; 'deskilling' was a common phrase, although it was probably removing responsibility for patient care rather than skills that may never have existed in the first place. Managers could be reluctant to fund the service properly. And the recipients of the service, the patients? Well, no one asked them. So finding out whether METs 'work' is an important matter. The problem is that the health care systems that funded METs did not want to spend additional money on finding out whether they were effective, and those of us involved from the beginning were unable at that time to persuade research funders otherwise [5].

So how should we interpret the findings of this latest study? Can those of us with RRTs close them down and put the resources elsewhere? We would counsel caution, for the following reasons.

First, the main problem surrounding the entire literature on RRTs is that the publications never specify the content of the intervention. An RRT is not an intervention: it is a vehicle for an intervention such as sepsis bundles or early antibiotics or a do-not-resuscitate (DNR) order or (perhaps even more importantly) education. As in the (similarly negative) PAC-Man study [6], the use to which the tool is put is largely unknown. Given the diffusion of best practice, we can be reasonably confident that non-MET hospitals will also have doctors and nurses who want to provide good care and avoid burdensome futile care. The MET may therefore be an iphenomenon for a desire to improve.

Second, should we use process or outcome measures for evaluation? Processes of care are important not only because they may alter outcomes (the destination), but because they can change the way in which that outcome is achieved (the pathway). End-of-life care is the obvious example. Last week, our outreach nurses called one of us to an acute ward because a junior doctor was unwilling to implement a DNR order for a terminally ill 91-year-old man. We obtained full consensus on treatment limitation, provided comfort care, and contacted the patient's son, who then spent the few remaining hours by his father's bedside before death supervened. The alternative scenario would almost certainly still have resulted in a ward death, but without dignity and with less emotional resolution for the son. The outreach nurses changed the process, not the outcome. They may also have changed the junior doctor through education.

Third, it may be unwise to assume that the context in which the intervention is applied is similar across all hospitals. A

well-staffed hospital with excellent senior staff relationships and teamworking might find little benefit from an RRT, whereas in another the converse conditions might prevent an RRT from having any effect on outcomes. Differences in patients' severity of illness could confound the results: further refinements of ward-based measures of severity of illness might help in this respect [7].

Nurse-led, doctor-supported outreach care has transformed the way in which we in the UK provide support for acutely ill patients in ordinary wards in terms of relieving some of the workload on intensive care doctors, supporting timely delivery of care, improving pain relief and end-of-life care, enhancing communication, and teaching ward nurses and doctors. These qualitative aspects may not be reflected in immediate changes in mortality or ICU readmissions, but they may still be very important to patients. We are aware of John Galbraith's statement that 'Faced with the choice between changing one's mind and proving that there is no need to do so, almost everyone gets busy on the proof'. But perhaps the real problem is that we have not yet properly defined the content of the intervention, the context in which it is applied, or the research question.

## Competing interests

JFB declares an academic bias towards favouring outreach care as an effective method of improving the quality of acute care.

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