

Editorial:

The Rapid Response Team Paradox: “Why doesn’t anyone call for help?”

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The Medical Emergency Team (MET) or Rapid Response Team (RRT) system is a system of care for clinically unstable patients in the general ward areas of hospitals. When a patient’s bedside observations breach predetermined levels of abnormality or the bedside nursing staff is “worried” about a patient’s condition, they can call a resuscitation team to attend the patient (1). The basic assumption for this system of care is that resuscitation of unstable patients is more likely to succeed if commenced as soon as possible after clinical instability is discovered, and in particular before the patient has a cardiac arrest. For obvious ethical reasons, this assumption has never been tested. However, there are numerous studies that describe poor patient outcomes not only from in hospital cardiac arrests (2), but also from unplanned intensive care unit admissions from the general ward areas (4,5). Furthermore, there is a significant body of research that documents that these events are often preceded by significant periods of documented clinical instability (2,6-9).

Despite this rationale for MET/RRT systems, their endorsement by the Institute for Health Care Improvement in the United States (10), and the Quality Council in Australia (11) the data to support their effectiveness is equivocal. In 2002, our group reported a 50% case mix adjusted reduction in our hospital cardiac arrest incidence from 1996 to 1999 with the implementation of a MET system (1). Three other studies have since also reported similar findings with MET implementation (12-14). We have followed up on our initial results with data from the last 6 years where we have demonstrated a 24% annual reduction in cardiac arrest incidence in our hospital (15). However, these studies have been criticized because they have used a historical control before-and-after methodology (16,17). On the other hand, the only large randomized prospective study of MET implementation, the MERIT study (18), did not demonstrate a significant reduction in a composite outcome that combined the incidence of cardiac arrest, unexpected death and unplanned ICU admission (5.86 vs. 5.31, $p=0.64$).

A clue to the explanation for the discrepancy in results between the historical control single centre studies (1,12-15) and the MERIT study is given in table 2 of the MERIT study (18). This table shows that, in a large number of instances where the composite outcome occurred, the patient had MET call criteria. Yet, medical/nursing staff just did

not call the MET. For patients in the MET hospitals who had a cardiac arrest, and had MET calling criteria greater than 15 minutes before the cardiac arrest, the MET team was not called in 30% of instances. Likewise, for unplanned intensive care unit admission and unexpected hospital death the incidence of failure to call the MET was 51% and 50% respectively. Thus, the MERIT study could not measure MET effectiveness simply because the randomized intervention was often not received by the patient. These findings then raise the rather obvious question of, “Why did the bedside clinical staff not activate the MET?” In a voluntary survey of staff in the 12 MET intervention hospitals in the MERIT study, MET utilization was related to staff understanding of the MET system, and a general positive perception of the individuals hospital to accept change (19).

In this issue of the journal (20), Bellomo and colleagues further describe this phenomenon. These authors started with the hypothesis that delay in activating the MET should be more common and longer in patients with an acute change in conscious state (defined as a sudden decrease in Glasgow coma score of 2 or more points or the development of delirium) than in patients with acute cardiac arrhythmia (defined as either heart rate less than 40 beats per minute, or greater than 120 beats per minute). They then went on to measure that delay (defined as MET activation time of greater than thirty minutes from the time of documentation of the trigger observation) in these two groups. More importantly, impact of that delay on 30 day mortality was assessed. This study was done as a retrospective analysis of two cohorts of 100 patients, in a single university teaching hospital with a mature MET system in place since 2000. There was a trend to increased delay in the conscious state group in both incidence (35% vs. 24%) and duration (16 vs. 13 hours), but this difference was not statistically significant ($p=0.09$). The authors then pooled the two groups to find that 59 of the 200 MET calls were delayed (29.5%). The 30 day mortality rate for patients who had MET call delay was 37% versus 22% for patients who were attended by the MET within 30 minutes of a documented deterioration ($p=0.025$). All of the differences reported above were the same when patients with “not for resuscitation” orders were excluded. The fact that, in this study, patients who received prompt MET intervention did better than patients who received, at least for a period of time, standard care, by default, supports the MET system of care.

Despite these findings the question raised by the MERIT study remains the same, “Why didn’t anybody call for help?” This is even the case in a hospital with a mature MET system, that has all the in-service, educational and audit support and that has demonstrated international leadership in MET implementation (12,20). Sadly, our hospital as well, has experienced exactly the same phenomenon (21). Interestingly, the Austin hospital group has previously reported the results of a survey of their own hospital ward nursing staff, which reveals, that when confronted with a patient that fulfills MET call criteria, these staff would still call the parent clinical unit rather than activate the MET (22). In other words, despite the plethora of in service, education and audit that the Austin hospital has devoted to MET implementation, a significant minority of staff would still rely on the traditional hierarchical referral model of care instead of calling the MET.

These findings, lead us to the rather awkward conclusion, that we as critical care physicians have a better understanding of the management and patho-physiology of defined clinical syndromes of critical illness such as sepsis and myocardial ischemia than we do of the way that clinical care is delivered to critically ill patients in the wards of our own hospitals. It would similarly be easy to conclude that our colleagues, more often than not junior and inexperienced, out in the general ward areas, are inappropriately managing such cases. However, invariably when one performs a root cause analysis of such cases, we uncover the phenomenon of “clinically futile cycles.” Clinically futile cycles occur when there is a lot of clinical activity (all of it with good intention) directed at the patient, but little of this activity relieves the dire circumstances of the patient (15). Frequent examples of this include the surgical team seeking a cardiology consult for the overtly septic post operative patient because of the narrow complex tachycardia of 150 beats per minute, or obtaining advanced imaging to make a diagnosis in the severely hypoxic patient. All such clinical activities have merit, it is just that they are invariably time consuming and can delay appropriate resuscitation.

What conclusions can we draw from the evolving literature on MET’s and RRT’s? Firstly, as critical care physicians, we need to understand more about the patho-physiology of critical illness in our own hospitals. More specifically, we need to discover and then dissolve the barriers that prevent staff from calling for appropriate and timely help for their patients. Also, as part of this, we need to understand more clearly the relationship between resuscitation status and the calling of teams such as the MET (23). Secondly, regardless of one’s view on the value or otherwise of MET’s and RRT’s, the question of who should be doing the resuscitation of critically ill hospital patients needs to be addressed. As the specialists trained in resuscitation and management of critically ill patients, we should not be washing our hands of the critically ill general ward patients. At the very least, we should be guiding, educating and supporting our colleagues in the general wards. It would be totally unacceptable to have a cardiac surgeon doing orthopedic surgery or a hematologist attending a patient with severe asthma. Similarly, management of critical illness should be performed by the specialists with training in that area. Thirdly, there needs to be much greater innovation from the health information communication technology industry for new solutions that provide real time patient information to healthcare providers with patient alerts and alert logic that ensures appropriate and timely clinical responses. Fourthly, education and training of all staff in the management of the complex critically ill ward patient needs to be a priority. In particular, there needs to be greater focus on team training, skills development and communication. Finally, we need to consider the perspective of our patients. “Right Care, Right Now” should be a patient right.

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