



ESICM 2014: Does Flexibility Increase Safety and Efficiency?



Flexibility in intensive care provision was the focus of a session this morning at the European Society of Intensive Care Medicine's Congress in Barcelona, which asked if flexibility will of ICU services.

Medical emergency teams may make a difference, said Dr. Akos Csomos from Hungary, but there are difficulties in researching their effectiveness, and issues in culture and professional boundaries in their introduction.

Csomos reviewed the evidence for medical emergency teams (MET), asking if there is yet a proof of concept. Evidence has been accruing since the publication by [Kerridge and Saul](#) in the Medical Journal of Australia in 2003, when they wrote, "many centres appear to be awaiting "gold standard" evidence of its effectiveness. We suggest that the quest for evidence is providing scientific justification for institutional inertia, and that further delay in implementing this system may even be unethical."

A study by [Jones et al.](#) (2005) showed an association between increased MET call rate and reduction in cardiac arrest.

Another [study](#) published in 2007 showed the effect of MET on long term mortality following major surgery. In this study patients were followed for 1500 days and the results were an improvement in long-term outcome.

The first randomised trial, randomised by cluster, was published in the [Lancet](#) in 2005. The results showed that the MET system greatly increases emergency team callout, but does not substantially affect outcomes.

A systematic review and meta-analysis by [Chan et al.](#) published in 2010 showed that rapid response teams were not associated with lower hospital mortality rates. However, they was associated with a 33.8% reduction in rates of cardiopulmonary arrest outside the ICU.

Research Difficulties

Randomised trials depend on numerical strength, which requires patient randomisation. Ethically randomisation by patient cannot be used in trials of METs. In addition it is unethical to randomly assign patients to a 'placebo' intervention. The solution is to randomise by clusters of hospitals, but they require large numbers of centres (over 100 hospitals) for meaningful results.

Before and after studies lack rigour and generalisability. And the Hawthorne effect (whereby the person being studied performs better by virtue of being observed). In a clinical trial that means additional clinical response

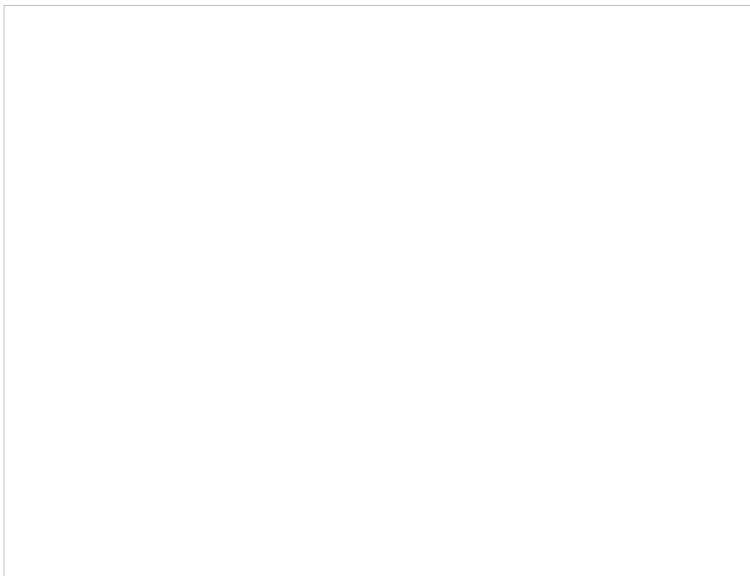
that results from increased attention provided by participation in the clinical trial. And it also applies if you are in the control arm of the trial.

Organisational Difficulties

Implementing a MET breaks from the traditional hierarchy of medical consults. It challenges medical “pow” - “it’s my patient”. It gives ward nurses more independent authority. There may be perceived shame in calling the MET. There may be inefficient ward monitoring of physiological signs and a delay in activating the MET. Then there are the non-clinical challenges - logistical, financial, educational, cultural and so on.

A recent study by [Boniatti et al.](#) in Critical Care Medicine documented delayed MET calls and associated outcomes. Delay was defined as documented MET criteria for which no MET call was made during the period 30 minutes to 24 hours prior to a MET review. They found that delayed MET calls occurred for 21.4% patients, so 1 in 5 patients was referred too late.

Availability of ICU beds also affects MET usage. The study by [Stelfox et al.](#) published in Archives of Internal Medicine showed that more patients had their goals of care changed from resuscitative care to medical or comfort care when zero ICU beds were available. However, hospital mortality did not vary significantly by ICU bed availability [see figure].



Csomos concluded that the scientific evidence is confusing on whether using medical emergency teams improves patient outcome. The magnitude of effectiveness of METs varies between hospitals, depending on: availability of ITU/HDU beds; the patients’ severity of illness; quality of ward care and teamwork within medical teams (both ward and ICU).

Csomos declared that if it was affordable he would do it, saying “Strong scientific evidence may not ever come, but the principle is definitely in the patient’s best interest.”

Questions from the audience touched on how to identify patients in need of medical emergency teams - answer - the technology is not there yet in terms of accuracy of gathering data from medical records. Measuring mortality might not be the best outcome, and length of stay should be considered. If early intervention succeeds, length of stay in the ICU should be reduced and perhaps hospital length of stay will be shorter.

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