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Medical Emergency Teams (METs): Preventive Practice

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Professor Hillman discusses the preventive potential of MET-type systems in the aim towards hospitalwide patient safety.

The specialty of Intensive Care Medicine is over 50 years old, but like any new specialty, took some time to be accepted. Clinicians were used to attending to most aspects of care for their patients. Gradually colleagues came to accept the special training and expertise of intensivists. Initially it was important that the specialty was nurtured within the four walls of an Intensive Care Unit (ICU). However, it soon became apparent that many patients outside the ICU were also seriously ill, or at-risk of becoming so.

For example, over 80% of patients who had a cardiac arrest on the general wards had evidence of a slow deterioration in their vital signs, often over many hours (Schein et al. 1990). Similarly, patients who had an expected death (Hillman et al. 2001) or unplanned admission to the ICU (Hillman et al. 2002) showed signs of gradual deterioration, rather than this being a sudden and unanticipated event. This situation is compounded by the increasing specialisation in medicine. Undergraduates are taught little intensive care medicine. Up until recently the patient was not seen by specialists in acute medicine until they had deteriorated enough to require admission to the ICU. At the same time, research has demonstrated that no matter how excellent management is after patients have been admitted to the ICU, the outcome is poor if hypoxia and ischaemia have not been reversed at an early stage (Hayes et al. 1994; Hinds and Watson 1995; Gattinoni et al. 1995).

It made intuitive sense that early detection and rapid resuscitation would result in better outcomes for patients. In 1989 the Medical Emergency team (MET) was first introduced (Hourihan et al. 1995; Lee et al. 1995). It was based on criteria used to identify at-risk patients at an early stage, the so-called MET criteria. These included vital signs such as abnormal extremes of pulse rate, respiratory rate, and blood pressure. Other criteria included a sudden drop in the level of consciousness, seizures and, of course, cardiorespiratory arrests. The team could also be called by any staff member who had serious concerns about a patient. Once the MET criteria had been observed, a MET call was made in much the same way as a cardiac arrest call is made. Thus, intensive care specialists are involved with the seriously ill anywhere in the hospital at an early stage in patient illness.

Other systems to care for the seriously ill across the whole hospital have also been developed. These include the "patient at-risk team" (PART: Goldhill et al. 1999) and the "Modified Early Warning System" (MEWS: Stenhouse et al. 2000), each with slightly different criteria and responses. The concept of Outreach has been implemented in many British hospitals (Bright et al. 2004) and involves intensive care staff, usually nurses working with staff in general wards, educating them and increasing general awareness of at-risk patients and how to recognise signs early and call for help from the ICU.

Obviously, extra resources are required of the ICU if they are to provide a service across the hospital. Many hospitals now have an "outside" doctor as well as a MET co-ordinator attached to the ICU, dealing with issues related to hospital-wide patient safety. In the current climate of increased attention to making hospitals safe, this is seen as a minimal investment to achieve an around the clock system designed to prevent serious adverse events.

In the few studies completed so far, Outreach and MET-type systems have been shown to decrease unplanned admissions to the ICU (Bristow et al. 2000) and to reduce the number of cardiac arrests and deaths in a hospital (Bellomo et al. 2003; Buist et al. 2002). It is difficult to imagine that we will not continue to develop systems, which identify seriously ill patients no matter where they are in the hospital, and to manage illnesses at the earliest possible stage. Intensive care physicians are uniquely equipped to lead development of these systems, as seriously ill patients in the general wards are merely part of a spectrum of an illness, which intensivists are trained to manage.

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