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Overview of Outreach

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Intensive care medicine arguably began in Copenhagen in the early 1950s. Mortality from poliomyelitis was reduced from 80 to 40% as a result of intubation and artificial ventilation. Dedicated Intensive Care Units (ICUs) were soon established and the experience gained by clinicians in caring for seriously ill patients with poliomyelitis was used to support other patients such as patients after major surgery and those with a wide range of serious medical conditions. These patients would almost certainly have died prior to the establishment of ICUs.

The speciality of intensive care was nurtured within the four walls of the ICU. Nurses, and then medical practitioners, were specifically trained in the speciality of intensive care. The speciality blossomed in the 1970s and 1980s. Specific textbooks and journals were published and thriving national and international societies were established, in addition to well-organised training and research initiatives. The physical space of the ICU enabled much of the speciality to be defined. However, it gradually became apparent that patient outcome from intensive care was determined by their management before their admission to the ICU as well as by management within the ICU.

The serious impact of delayed resuscitation was noted in 1989 when “lead-time bias” was emphasised as influencing hospital outcome, independent of the severity of illness on admission to the ICU. There is good evidence that multi-organ failure begins at an early stage of untreated ischaemia and hypoxia. During the 1990s there was a trend to provide supranormal oxygen delivery on admission to the ICU. It soon became evident that this did not influence patient outcome, as serious and sometimes irreversible organ damage had already occurred. Later we learnt that early resuscitation, beginning in the Emergency Department, did improve outcome.

Moreover, there is a high incidence of potentially preventable antecedents in the hours before serious adverse events such as deaths, cardiac arrests and unanticipated admissions to ICUs. It is also clear that the management of seriously ill patients prior to their admission to the ICU was often delayed and managed by unskilled staff. The number of potentially at-risk patients in general wards is increasing as the nature of hospitals change. Patients are now older, with increasing co-morbidities and having more complex surgery and other treatments.

In order to improve patient outcomes throughout the whole hospital, intensive care specialists established the Medical Emergency Team (MET) system. The system consists of criteria, which define at-risk patients such as vital sign and observational abnormalities; as well as a rapid response to those patients.

Many variations on this initial concept have now been developed, using different criteria and levels of response. Examples of these include the patient-atrisk team; a system based on a modified early warning score. One of the unanticipated advantages of establishing such systems is that they increase the awareness of staff around the significant problem of seriously ill patients outside the ICU. The concept of ‘Critical Care Without Walls’ is now common in many countries. Along with specific responses to potentially at-risk patients, intensive care staff are also becoming involved in strategies such as educational initiatives and consultation services.

Broadly, the extension of intensive care skills and experience outside of the ICU is sometimes known as Outreach. The speciality of intensive care obviously does not have a monopoly on the management of seriously ill patients. Other specialities such as emergency medicine and acute general medicine are increasingly being involved in hospital systems designed to recognise and resuscitate the seriously ill at the earliest stage possible.

Before and after and case controlled studies have demonstrated significant improvement in the incidence of serious adverse events as a result of introducing a MET-type system. Outreach systems have also been shown to have a beneficial effect on patient outcome.
The largest study using cluster randomisation (MERIT Study) of 23 hospitals was inconclusive. However, the study provided insight into the

important of implementation of the system across a whole hospital. Evaluation of the effects of a complex system on patient outcome is more challenging than, for example, comparing a new drug against a placebo. For example, in the MERIT study, less than 50% of patients with criteria identifying them as being seriously at risk had a call made and many patients did not have their vital signs measured in a timely fashion. Obviously, response to seriously ill patients cannot occur if a team is not alerted or if the vital signs that trigger calls are not measured.

Many hospitals in North America, Europe and Australasia now have some sort of rapid response or outreach programme in operation. Like the establishment of ICUs themselves, we may never be able to accurately assess its impact on serious illness. Nevertheless, few intensive care clinicians would advocate delayed treatment of hypoxia and ischaemia.

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