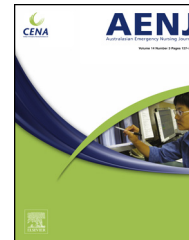




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RESEARCH PAPER

Recognising clinical deterioration in emergency department patients



Jennifer Hosking, BN, GradDipNurs(Critical Care), MNursPrac^{a,*}
Julie Considine, RN, RM, BN, GradDipNurs(AcuteCare),
GCertHigherEd, MN, PhD, FRCNA^b
Natisha Sands, RPN, BN(Hons), PhD^a

^a School of Nursing and Midwifery, Deakin University, Geelong, Australia

^b Eastern Health – Deakin University Nursing and Midwifery Research Centre, School of Nursing and Midwifery, Burwood, Australia

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KEYWORDS

Emergency care;
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Rapid response team
risk management
patient safety

Summary

Background: The use of rapid response systems such as Medical Emergency Team (MET) improves recognition and response to clinical deterioration in in-patient settings. However, few published studies have investigated use of rapid response systems in Australian emergency departments (ED).

Aim: To examine the frequency, nature and outcomes of clinical deterioration in ED patients and compare the utility of hospital MET calling criteria with ED specific Clinical Instability Criteria (CIC) for recognition of deteriorating patients. The outcomes of interest were the prevalence of deterioration in ED patients, the utility of MET versus ED CIC, and the outcomes (MET activation, in-hospital mortality at 30 days) of patients who experienced deterioration during ED care.

Method: An exploratory descriptive design was used. Vital sign data were prospectively collected from 200 patients receiving ED care in the general treatment areas of regional, publicly funded health service in Victoria, Australia, during May 2012. Outcome data were collected by follow up medical record audit.

Results: Of the 200 ED patients recruited, 2% fulfilled the study site MET criteria and 7.5% fulfilled ED CIC. The median age of patients fulfilling MET criteria was 85 years compared with a median age of 74 years for patients fulfilling the ED CIC criteria. Of the 136 ED patients admitted to in-patient wards, 5.9% required MET activation during admission and 3.7% of these MET activations occurred within 24 h of emergency admission. Five percent of patients died in-hospital within 30 days of ED attendance.

* Corresponding author at: 1 Gheringhap Street, Geelong, Victoria 3220, Australia. Tel.: +61 352278438.
E-mail address: Jennifer.hosking@deakin.edu.au (J. Hosking).

Conclusions: ED specific criteria for activation of a rapid response system identifies more ED patients at risk of clinical deterioration. The results of this study highlight a need for EDs to implement and evaluate systems to increase recognition of deteriorating patients designed specifically for the emergency care context.

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What is known

- Abnormalities in patient's vital signs are known to precede serious adverse events and are indicators of clinical deterioration.
- The use of track and trigger systems such as Medical Emergency Teams (MET) has improved recognition and response to clinical deterioration in in-patient settings.
- Few published studies have investigated use of track and trigger systems in Australian emergency departments (ED).

What this paper adds

- This is the first Australian study comparing hospital MET criteria with ED specific track and trigger criteria in the ED context.
- An ED specific track and trigger system identifies more ED patients at risk of clinical deterioration.
- ED patients triaged to Australasian Triage Scale (ATS) categories 3 and 4 have the potential to deteriorate during ED care.
- One in 17 ED patients admitted to an inpatient ward had a MET activation during admission, most of these occurring in the first 24 h of inpatient admission.

Introduction

The early recognition and response to clinical deterioration are essential in preventing high mortality adverse events such as cardiac arrest, unplanned intensive care unit (ICU) admission and death.^{1–3} There is clear evidence that physiological vital sign abnormalities precede these serious adverse events^{4–9} and that failure to recognise and appropriately respond to these signs of clinical deterioration increases the risk of high mortality adverse events.^{2,4,5,10–12} Early recognition of clinical deterioration is essential for timely escalation of care, clinical response and appropriate management of the patient's condition, all of which are key factors in preventing adverse events.^{2,13,14} Rapid response systems and track and trigger systems are commonly described in the literature as systems to promote recognising and responding to deteriorating patients related to clinical deterioration.^{2,3,15–18} Rapid response systems aim to identify patients at risk

of deteriorating of high mortality adverse events, enable early notification of experts in the management of critically ill patients and result in rapid intervention by the expert teams.¹⁹ Track and trigger systems are one component of rapid response systems and are processes that promote the recognition of clinical deterioration through regular assessment of vital signs (tracking) and support clinical-decision making by identifying predetermined physiological criteria (triggers) that indicate when to escalate care to an emergency response team with expertise in management of the critically ill patient.¹⁵ The most common rapid response system used in the in-patient wards of Australian acute hospitals is the Medical Emergency Team (MET) calling criteria.²⁰

The Australian Commission on Safety and Quality in Healthcare (ACSQHC)²¹ recommend that all patients in acute care settings have access to a system for recognising and responding to clinical deterioration. Recognising and responding to clinical deterioration is now one of the ACSQHC National Safety and Quality Health Service Standards (Standard 9) and fundamental to health service accreditation.²² While rapid response systems have been widely implemented in the in-patient areas of acute hospitals in Australia,²⁰ evidence of their widespread use in Australian emergency departments is limited.^{23,24}

There are a number of reasons that patients in the ED are at increased risk of unrecognised, unreported and/or under-treated clinical deterioration. First, ED patients are usually unknown to staff, often present with non-specific complaints that carry a wide range of differential diagnosis, and important information such as medications or past medical history is often limited or unavailable.²⁴ The ED environment also poses additional risks for clinical deterioration to go unrecognised, unreported and/or under-treated. The ED is a time-pressured environment, that at times, has uncontrolled workload with limited resources.²⁵ The most experienced staff with expertise in assessment and management of critically ill patients are often concentrated in areas of clinical urgency such as triage or resuscitation rooms,^{26,27} while patients in the general treatment areas are often cared for by staff with less experience or expertise in identifying deteriorating patients. Without the use of a system to consistently define clinical deterioration, recognition of deteriorating patients can be inconsistent and is clinician dependent.²⁴ Despite these unique features of the ED context and patient population, the use of rapid response systems in Australian emergency departments is limited and the prevalence of ED patients experiencing clinical deterioration poorly understood.

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