

# Patient at risk!

Nicola Cooper

**ABSTRACT – Recent Department of Health-led reviews have recommended wide-ranging changes in the provision of critical care which will affect most physicians. Critically ill patients on general wards are too often missed, and intervention is often too late. Early warning scoring systems can improve outcome by detecting critical illness earlier and by acting as triage tools. The re-classification of care, levels 0–3, means that physicians and intensivists will increasingly work together to provide the level of care required for our sickest patients.**

In April 1999, the Department of Health (DoH) established a review of adult critical care services and invited an expert group to develop a framework for the future organisation and delivery of critical care. Its report, *Comprehensive critical care*<sup>1</sup>, was published earlier this year, and a subsequent Health Service Circular (HSC), *Modernising critical care services*<sup>2</sup>, will affect all physicians working on medical admission units or those on-call for unselected medical emergencies. This article summarises some of the most important recent developments.

The Audit Commission's *Critical to success – the place of efficient and effective critical care services within the acute hospital*<sup>3</sup>, published in October 1999, re-emphasised the concept of the 'patient at risk' – ward patients at risk of their condition deteriorating into a need for critical care. Better training of junior medical and nursing staff, early warning scoring systems and 'outreach' critical care were advocated in that report.

The concept of the patient at risk is not new. Patients admitted to intensive care units (ICU) from general wards have the highest mortality when compared with admissions from theatre or accident and emergency (A&E)<sup>4</sup>. Goldhill and Sumner showed that physiological abnormalities were commonplace and well documented in the 24 hours preceding admission to the ICU. They hypothesised that the delay in both recognition and adequate treatment of serious abnormal physiology meant that patients finally admitted to ICU were so sick that they were unlikely to recover<sup>5</sup>. A review by McQuillan *et al* of the quality of care received by patients prior to admission to ICU found that admission was considered late in 69% of cases but, more importantly, up to 41% of admissions were

deemed avoidable and suboptimal ward care was considered to have contributed to morbidity or mortality in the majority of cases<sup>6</sup>. In an analysis of medico-legal claims arising from the care of patients admitted as medical emergencies, Neale showed defects in the organisation of care, including inadequate input from experienced clinicians<sup>7</sup>. The observation that most in-hospital cardiac arrests are predictable<sup>8</sup>, and therefore probably preventable, is in a similar vein and has led the Federation of Medical Royal Colleges to propose that the cardiac arrest team be abolished in favour of the medical emergency team<sup>9,10</sup>.

One of the central proposals of the DoH report is that patients are classified according to the severity of their illness, not according to the kind of bed they occupy. Hence the existing classification of general, high dependency or intensive care beds will be replaced. Instead, patients will be classified according to the level of care they need (levels 0–3), and the necessary resources mobilised (Table 1). Early action is outlined in the HSC, and by now all trusts should have established a critical care delivery group. However, while most Trusts have established these groups, 'outreach' critical care is still very much in its infancy.

Targeted care has been shown to reduce mortality and cardiopulmonary resuscitation (CPR) rates. This is the purpose of early warning scoring systems, but at the moment high dependency provision is patchy and variable throughout the UK<sup>11–13</sup>. It is estimated

**Nicola Cooper**

MRCP, Specialist Registrar, General Internal Medicine & Care of the Elderly, Yorkshire

*Clin Med JRCPL*  
2001;1:309–11

**Table 1. Classification of critical care patients.**

## Level

- 0 Patients whose needs can be met through normal ward care in an acute hospital
- 1 Patients at risk of their condition deteriorating, or those recently relocated from higher levels of care, whose needs can be met on an acute ward with additional advice and support from the critical care team
- 2 Patients requiring more detailed observation or intervention including support for a single failing organ system or post-operative care and those 'stepping down' from higher levels of care
- 3 Patients requiring advanced respiratory support alone or basic respiratory support together with support of at least two organ systems. This level includes all complex patients requiring support for multi-organ failure

Level 2 is equivalent to high dependency unit care.  
Level 3 is equivalent to intensive treatment unit care.

**Table 2. Modified of early warning score** (based on the ones used in Queen's Hospital, Burton-on-Trent).

Score	3	2	1	0	1	2	3
Heart rate (beat/min)		<40	40–50	50–100	100–110	110–130	>130
Systolic blood pressure (mmHg)	<70	70–80	80–100	100–200		>200	
Respiratory rate (breaths/min)		<8		8–15	15–20	20–30	>30
Temperature (°C)		<35		35–38.5		>38.5	
Central nervous system				A	V	P	U
Urine output (ml/kg/h)	Nil	<0.5	<1				

A score of 4 or more triggers a call to the responsible doctor. This score and others like it can easily be incorporated into ward observation charts.  
A = alert; V = responds to voice only; P = responds to pain only; U = unresponsive.

that up to 10% of medical emergencies are level 1 or 2 patients. This has several implications:

- Pressure of numbers is a big problem in most medical admission units. They should all probably have a formal triage system in place so that critically ill patients are seen first. Several triage systems are in use, particularly developed for A&E, but the best known are too cumbersome, involving complex diagnostic trees. Simple early warning scoring systems would suffice both as a triage tool and as a scoring system for critical illness generally.
- Junior medical and nursing staff need training to recognise the signs of physiological decline and to manage the patient logically<sup>14</sup>. Physicians have, in general, had inadequate training in acute medicine<sup>15</sup>. Intensive care teams are developing outreach services which will undoubtedly involve recruiting new consultants whose role will centre on training and outreach work. A fine balance will be needed so that ward staff do not lose their existing skills.
- New intensive care medicine training requirements mean that many anaesthetic rotations will look to swap senior house officers (SHOs) with medicine for up to a year. The Medical Royal Colleges have already advocated that medical SHOs and specialist registrars (SpRs) spend time in intensive care<sup>15</sup>.
- Critical incident reporting, a new approach to medical error, and increasing emphasis on data collection mean that all medical admission units should work towards comprehensive data collection and audit. The Royal College of Physicians (RCP) is currently in discussion with the National Institute for Clinical Excellence regarding a confidential enquiry into deaths of emergency admissions along the lines of CEPOD (confidential enquiry into perioperative deaths).
- The HSC re-emphasises that admission to level 2 or 3 care should be by consultant to consultant agreement only. This increases the emphasis on consultant physicians seeing and advising on the care of critically ill patients.

Examples of early warning scoring systems are shown in Table 2. Senior physicians already know that a patient who has a low blood pressure, is breathing fast and is drowsy is critically ill. In fact, scoring systems are only common sense. But these ward patients are somehow being missed until it is too late. The

**Table 3. The patient at risk protocol used at the Royal London Hospital.**

A senior ward nurse should contact the responsible doctor and inform them of any patient with:

**Any 3 or more of the following:**

- RR<10 or >25
- SBP<90
- HR<55 or >110
- Not fully alert and orientated
- Oxygen saturation <90%
- Urine output <100 ml over last 4 hours

**OR**

Not fully alert and orientated PLUS RR>35 or HR>140

Unless immediate management improves the patient the doctor should consider calling the medical emergency team. A doctor of registrar grade or above may call the team (normally after discussion with the consultant).

RR = respiration rate; SBP = systolic blood pressure; HR = heart rate

attraction of scoring systems illustrated in Table 2 is that they remove the reliance on individuals and build into an organisation a protocol for dealing with critical illness. Nursing staff may feel happy working to a protocol, and junior medical staff are obliged to take action and call their seniors. The intensive care or medical emergency team can be called after a minimum of

Key Points

Recent Department of Health-led reviews have recommended wide-ranging changes in the concept and provision of critical care which will affect all physicians responsible for unselected medical emergencies

The 'patient at risk' of decline and in need of critical care is being missed on general wards and intervention is often too late

Early warning scoring systems are recommended, whether used as triage tools or as a means of assessing critical illness generally by junior medical and nursing staff

The medical admission unit of the future will have a much closer relationship with the intensive care unit and will jointly train junior staff

SpR level intervention has taken place and it is deemed that level 2 or 3 care is appropriate and necessary.

All this forms part of clinical governance, something the RCP has defined as a dual responsibility – of the clinician to maintain good standards, and of managers to provide adequate resources<sup>15</sup>. Therefore, in addition to these recent reports and circulars, physicians, in theory at least, have a powerful tool to be able to get the resources they need to look after their most vulnerable patients.

## References

- 1 Department of Health. *Comprehensive critical care – a review of adult critical care services*. Report. London: DoH, May 2000.
- 2 Department of Health and NHS Executive. Health Service Circular (HSC) 2000/017. *Modernising critical care services*. London: DoH, 23 May 2000.
- 3 Audit Commission. *Critical to success – the place of efficient and effective critical care services within the acute hospital*. Report. London: HMSO, October 1999.
- 4 Goldhill DR, Sumner A. Outcome of intensive care patients in a group of British intensive care units. *Crit Care Med* 1998;**26**:1337–45.
- 5 Goldhill DR, White SA, Sumner A. Physiological values and procedures in the 24 h before ICU admission from the ward. *Anaesthesia* 1999;**54**:529–34.
- 6 McQuillan P, Pilkington S, Allan A, Taylor B, *et al*. Confidential inquiry into quality of care before admission to intensive care. *Br Med J* 1998;**316**:1853–8.
- 7 Neale G. Risk management in the care of medical emergencies after referral to hospital. *J R Coll Physicians Lond* 1998;**32**:125–9.
- 8 Schein RM, Hazday N, Pena M, Ruben BH, Sprung CL. Clinical antecedents to in-hospital cardiopulmonary arrest. *Chest* 1990;**98**:1388–92.
- 9 Goldhill DR, Worthington L, Mulcahy A, Tarling M, Sumner A. The patient-at-risk team: identifying and managing seriously ill ward patients. *Anaesthesia* 1999;**54**:853–60.
- 10 Lee A, Bishop G, Hillman KM, Daffurn K. The Medical Emergency Team. *Anaesth Intensive Care* 1995;**23**:183–6.
- 11 NHS Executive. *Guidelines on admission to and discharge from intensive care and high dependency units*. London: Department of Health, March 1996.
- 12 Statistical Press Notice 2000/0504. *Census of adult intensive care and high dependency provision*. London: Department of Health, July 2000.
- 13 Goldhill DR. Medical emergency teams. *Care Critically Ill* 2000;**16**:209–12.
- 14 Pritchard C. Suboptimal ward care of critically ill patients. Medical training should focus on basic skills. *Br Med J* 1999;**318**:53.
- 15 Federation of Medical Royal Colleges. *Acute medicine: the physician's role. Proposals for the future*. Report. London: Federation of Royal Colleges of Physicians of the United Kingdom. Publications Unit, RCP, February 2000.
- 16 Maintaining good medical practice. Clinical governance and self regulation for physicians. Review. A report of the Royal College of Physicians. *J R Coll Physicians Lond* 1999;**33**:241–5.

## Address for correspondence:

Dr Nicola Cooper, 25 Thornville Street, Leeds, LS6 1RP.

E-mail: [nacooper@aol.com](mailto:nacooper@aol.com)