

# Training in the management of the acutely ill medical patient

Danny McAuley and Gavin D Perkins

**ABSTRACT – The care of acutely ill patients constitutes an important and increasing part of hospital practice. However, the care of the acutely ill by general physicians without adequate training in intensive care medicine is cause for concern. This article identifies ways in which the recognised deficiencies in the care of the acutely ill medical patient can be improved.**

**KEY WORDS: clinical competence, critical illness, emergency treatment, hospital mortality, medical education**

## Physicians in the care of the acutely ill patient

The role of physicians in the care of the acutely ill patient is increasingly important for several reasons. First, the emergency workload continues to increase. The Federation of Royal Colleges of Physicians recognised this and produced recommendations aimed at ensuring that critically ill patients receive effective care from appropriately trained physicians<sup>1</sup>. Furthermore, they recognised the importance of training in critical care medicine in this respect. In addition, the Royal College of Physicians of London (RCP) has recently published a report examining aspects of training and clinical practice at the interface between acute medicine and intensive care<sup>2</sup>. It recommends substantial changes in training at all levels, as well as a greater role for physicians in the care of the acutely ill. The emerging concept of critical care services has emphasised the need to develop critical care ‘without walls’, delivering care based on patient needs rather than geographical location within a hospital. This will require close collaboration between physicians and intensivists, sharing responsibility and working together in the care of critically ill patients<sup>3</sup>.

## Deficiencies in the care of the acutely ill

Concern is growing about deficiencies in the current training for physicians to enable them to acquire knowledge and skills for managing acutely ill patients. Many patients demonstrate signs of gradual

physiological decompensation prior to admission to intensive care<sup>4</sup> or cardiac arrest<sup>5</sup>. In many instances, medical staff fail to recognise the significance of these early warning signs. This is in line with the findings of the confidential enquiry into intensive care admissions reported by McQuillan *et al.* who found that the care of the severely ill patient before admission to intensive care is frequently sub-optimal<sup>6</sup>. Deficiencies in the care of the acutely ill are often related to poor management of simple aspects of acute care, including airway management, breathing and oxygen therapy, circulation and fluid resuscitation and monitoring. Lack of knowledge, failure to appreciate clinical urgency, lack of supervision, and failure to seek advice also contribute<sup>4-6</sup>.

Failure of organisation and lack of resources remain major reasons for this sub-optimal care. In the setting of an acute medical take with up to 50 admissions over a 24-hour period, spread over a wide geographical area, with limited resources, it is difficult to recognise, manage and review the acutely unwell patient. It is important to recognise the conflicting demands of general medicine. Instead of the small and finite number of patients as in intensive care, general medicine has to provide both an inpatient and an outpatient service. Management of the critically ill is more difficult on a medical ward with inadequate resources compared to an appropriately staffed intensive care unit (ICU) with adequate medical staff, a specialised nurse at every patient’s bed and ready access to complex organ support. Training alone will not improve this.

## Key Points

**Care of the acutely ill patient is frequently sub-optimal**

**Failure to recognise the acutely ill patient and poor management of simple aspects of care, including airway management, oxygen therapy, fluid resuscitation and monitoring occur frequently**

**Inadequate resources are a major factor contributing to deficiencies in care of the acutely ill patient**

**All medical staff should have the necessary competencies required to care for the acutely ill patient**

**Training in the care of the acutely ill must be improved and should be an integral part of undergraduate and postgraduate training**

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*Clin Med JRCPL*  
2002;2:323-6

## Improving training

All junior doctors should have the necessary 'core skills' or competencies required to care for the acutely ill patient. The training outcomes should be clearly defined and competency must be regularly assessed.

The aims of training in the care of an acutely ill patient are:

- the recognition of the acutely ill patient
- the importance of early intervention and, if appropriate, referral to ICU
- the importance of frequent re-assessment
- emphasis on physiological derangement as well as disease management.

## Assessment

The conventional approach to managing patients is diagnosis-based, with treatment commencing after the history, examination and investigations have been completed and a diagnosis established. An alternative approach is necessary when dealing with the acutely ill. A systematic approach measuring physiological derangement in each organ system to quantify severity of acute illness should be used (Table 1). This approach is simple to use and can be applied quickly. Treatment for the physiological derangement is commenced as it is identified and when the

patient is physiologically stable; further assessment to determine the diagnosis is then undertaken.

Increasingly, scoring systems based on physiological derangement are being defined which use a threshold score to allow recognition of acute illness. Such scoring systems can be used by inexperienced staff to identify acutely ill patients and trigger referral to senior medical or intensive care staff. A possible disadvantage of the reliance on scoring systems with a predefined trigger threshold is that it may reduce the need for and the ability of staff to properly assess and evaluate the acutely ill patient. It remains to be demonstrated whether the use of these scoring systems improves outcome in the care of the acutely ill. An example of a commonly used scoring system is given in Table 2.

## Training at undergraduate level

Undergraduate training in the care of the acutely ill has largely been neglected. The lack of any single department or speciality with responsibility for the delivery of training is a major contributing factor for the limited delivery of training in this area. Funding constraints, competition between subjects within the curriculum at undergraduate level, and increasing service demands placed on clinical staff who would generally provide education, are all factors hindering the provision of quality

**Table 1. Assessment of acute illness.**

Airway	Signs or risk of airway obstruction
Respiratory	Respiratory rate <8 or >30, SpO <sub>2</sub> < 93% on room air
Cardiovascular	Heart rate <40 or >100, systolic BP <100mmHg or fall of > 40mmHg from baseline
Renal	Urine output <100 ml/4 hr
Cerebral	Agitation, confusion or reduction in Glasgow Coma Scale
Metabolic	Metabolic acidosis base excess <-5

Increasing physiological derangement and organ involvement indicates increasing severity of illness.

Need to consider physiological abnormality in context of previous baseline value.

Patients with co-morbidity are at particular risk given poor physiological reserve.

**Table 2. The modified early warning score.** The further the deviation from physiological normal the higher the score and the sicker the patient. A score of 5 or more is a trigger for medical intervention.

Score	3	2	1	0	1	2	3
HR		<40	40–50	51–100	101–110	111–129	>=130
RR		<9		9–14	15–20	21–29	>= 30
Temp (°C)		<35		35–38.4		>38.4	
CNS				Alert	Voice	Pain	Unresponsive
Urine output	Nil	<1 ml/kg per 2 hr	<1 ml/kg per hr		> 3 ml/kg per 2 hr		
Syst. BP	> 45% reduction	> 30% reduction	> 15% reduction	Normal	>15% above	>30% above	>45% above

HR = heart rate; RR = respiratory rate; CNS = central nervous system; Syst. BP = systolic blood pressure.

training. However, undergraduate training is now being addressed in several ways. Medical schools are now developing modules on the recognition and care of the acutely ill. The Intensive Care Society is developing an introductory booklet for medical students on intensive care medicine which will cover assessment of the critically ill patient. The Resuscitation Council UK has launched a one-day Immediate Life Support course specifically designed for medical students and similar groups. This course, in addition to teaching about how to resuscitate a patient in cardiac arrest, introduces and develops the concept of recognising acutely ill patients and the importance of early intervention in these patients.

### Training at postgraduate level

There are initiatives likely to help address deficiencies in postgraduate training in the care of the acutely ill medical patient. Planned changes in senior house officer (SHO) training will introduce a generic first SHO year with emphasis on training in acute specialties. As part of this process, competency-based training defining required competencies for the management of the acutely ill medical patient is being developed by the RCP and the Intercollegiate Board for Training in Intensive Care Medicine. Table 3 includes a suggested list of competencies for acute general (internal) medicine. The complete competency-based training programme for intensive care medicine is available at [www.ics.ac.uk](http://www.ics.ac.uk).

**Table 3. Suggested generic competencies in acute general (internal) medicine.**

Resuscitation skills: the trainee should either have advanced life support certification within the last three years, or should have these skills assessed formally.

The trainee:

- promptly assesses the airway, breathing and circulation in the collapsed patient
- describes common symptoms and signs of acute illness
- identifies and documents acutely abnormal physiology
- establishes venous access with attention to infection control measures
- delivers oxygen safely to all acutely ill patients
- delivers a fluid challenge safely to acutely ill patients
- correctly interprets common ECG abnormalities
- correctly interprets common chest x-ray abnormalities
- correctly interprets common derangements in arterial blood gas results
- reassesses acutely ill patients following initiation of treatment within an appropriate period
- maintains a safe environment for an acutely ill patient
- requests senior or more experienced help when appropriate
- undertakes a focused history and examination to establish a differential diagnosis
- succinctly presents the relevant clinical details of an acutely ill patient to a senior doctor.

Furthermore, the Intensive Care Society has been asked by the RCP to develop a generic educational course for medical trainees in the management of the acutely ill patient. One such course is the Acute Life-threatening Events – Recognition and Treatment (ALERT™) course which is endorsed by the Intensive Care Society. This is a one-day multi-professional course in acute care designed to teach basic knowledge, skills and attitudes for managing acutely ill patients and detecting ‘at risk’ patients. The traditional 2–3 day Advanced Life Support course is also being revised to reflect the increasing realisation of the importance of early intervention to prevent cardiac arrests from occurring, rather than responding after the arrest has occurred.

Although these initiatives are helpful, it is likely that additional measures will be necessary to address this important deficiency in training. At present, the specialist registrar curricula for general (internal) medicine and the medical specialties are being revised by the Joint Committee on Higher Medical Training of the RCP. It is appropriate that training in the management of the acutely ill medical patient should be formally included in both the general (internal) medicine curriculum and the curricula of specialties which are likely to be involved in the care of acutely ill medical patients.

The reductions in junior doctors’ hours of work mean that trainers have to consider novel methods of delivering education. Distance-learning programmes or Internet-based educational resources that provide a range of teaching materials are examples of how this challenge can be met.

### Learning environment

Consideration must also be given to the training setting most appropriate to achieving the required competencies for the care of the acutely ill patient. Training in intensive care medicine and training in the care of the acutely ill are different. For physicians, the aim of training is not to produce intensivists but rather to increase their pre-existing skills in the care of the acutely ill patient at ward level. In fact, the intensive care unit might not be the best place to learn the skills required to care safely for acutely ill ward patients. All trainees involved in the care of acutely ill patients should undertake a period of training in order to obtain the necessary knowledge and skills to manage this group of patients. However, these required competencies can be obtained with adequate supervision in any critical care environment, such as a medical high dependency unit, a medical admission unit, a coronary care unit, as part of a critical care outreach team, as well as the intensive care unit.

### Assessment of competency

Assessment of the necessary competencies in the care of the acutely ill patient is inadequate: the fact that the MRCP examination no longer tests resuscitation skills emphasises this deficiency. A mechanism to ensure that trainees achieve competency in these areas requires development and introduction into the curriculum. Any physician trained in the care of the acutely ill

could assess competency in this area. However, with the increase in medical specialisation with less involvement in acute general medicine and the recognised deficiencies in current training in this area, not all physicians may have the necessary skills to assess competency in the care of the acutely ill. This issue will be addressed alongside improved training in the care of the acutely ill. In the meantime, collaboration between physicians and other doctors involved in the provision of critical care is likely to be required to assess competency in this area.

## Conclusions

Sub-optimal care of the severely ill is clearly an important issue for clinical governance and is in urgent need of review, standardisation and improvement. Organisational factors remain a major reason for this sub-standard care. However, deficiencies in training in the care of the severely ill also contribute, and improved training for trainees must be urgently implemented to improve patient care.

## References

- 1 Federation of Medical Royal Colleges. *Acute medicine: the physician's role. Proposals for the future*. Report of a working party. London: Federation of Royal College of Physicians of the United Kingdom, 2000.
- 2 Royal College of Physicians. *The interface between acute general medicine and critical care*. Report of a working party. London: RCP, 2002.
- 3 Cooper N. Patient at risk! *Clin Med JRCPL* 2001;1:309–11.
- 4 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.
- 5 Franklin C, Mathew J. Developing strategies to prevent inhospital cardiac arrest: analyzing responses of physicians and nurses in the hours before the event. *Crit Care Med* 1994;22:244–7.
- 6 McQuillan P, Pilkington S, Allan A, Taylor B *et al*. Confidential inquiry into quality of care before admission to intensive care. *BMJ* 1998; 316:1853–8.