

WHO BENEFITS FROM INTENSIVE CARE IN THE FIELD?

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Abstract

The limited capacity and resources of a Field Hospital Intensive Care Unit may necessitate the triage or prioritisation of critically ill patients requiring admission. The use of critical care resources by members of the local population in certain Areas of Operation, who can not be discharged or transferred to equivalent care in their local health service, impacts significantly on bed occupancy. Therefore available resources must be distributed efficiently and equitably with decisions guided by the principles of advocacy for the patient. Patients must be admitted only on the concept of potential benefit and reasonable chance of recovery, which would not be available elsewhere. Discriminating between seriously ill patients before admission and decision making regarding withdrawal of care is very difficult. Senior clinicians working regularly in a critical care setting demonstrate a better level of discrimination in assessing outcome of seriously ill patients and are best placed to make decisions regarding admission, continuation and withdrawal of treatment.

Introduction

Intensive Care is appropriate, where available, for patients who require, or are likely to require invasive monitoring or advanced organ support. The condition, from which the patient is suffering, must be considered to be both acute and reversible [1]. It is however, self evident, that health resources are not infinite, especially in a Field Hospital Intensive Care Unit (ITU) and one must balance potential benefits and harm to the patient, with cost, ethics and availability of resources. The decisions regarding which patients to admit to the ITU, when to limit or withdraw intensive care therapy and which patients should not be admitted are complex. This paper attempts to address some of the factors to be considered in making such decisions and who should make them.

The Role of the Field Hospital ITU

The role of the ITU within the Field Hospital is to provide continued resuscitation and physiological support, to allow recovery to discharge to the Ward, or safe evacuation to a Role 4 facility. The General Wards in a Field Hospital are scaled for basic medical and nursing care only. There is minimal capacity for continuous monitoring making critical care beds at a premium. In addition, the use of medical resources by members of the local population can impact significantly on bed occupancy. The limited level and availability of local medical resources within our current Theatres of Operation mean the endogenous population may require medical management entirely within the Field Hospital. During the war fighting phase of Operation Telic, a significant difference in ITU length of stay was recorded between coalition and local patients [2]. A declaration made by the Ministry of Defence has stated that *'servicemen and women, ill or injured should, whenever possible be offered medical care to a standard equal to that which they would receive in the UK in peacetime'* [3]. This is an admirable goal to which we should aspire and under ideal conditions patients would be admitted and discharged from a critical care environment strictly on their potential to benefit from ITU. Unfortunately cases will and do arise when the potential numbers of ITU patients exceeds the number of available beds. A method of triaging or prioritising these patients then becomes necessary [4]. Such triage or priority

decisions should be made explicitly and without bias. They may be made without patient or surrogate consent and may be made despite an anticipated untoward outcome [5].

Who Should be Admitted?

The decision to admit a patient to a field ITU should be based on the concept of potential benefit. One must remember that the life sustaining technology available in ITU does not guarantee long-term benefits for patients; indeed even with treatment death may still result and should the patient survive, unnecessary suffering may still occur [6]. In these circumstances treatment should be seen as futile and therefore unacceptable; with finite resources the provision of this care becomes even less acceptable. Therefore patients who are deemed too unwell to benefit, or those with no hope of recovery should not be admitted. The disease, trauma state or pathophysiological condition must be thought to be reversible for consideration for admission, along with their response to treatment thus far, the anticipated quality of life, wishes of the patient (if known) and availability of resources. In practice however, it is difficult to deny critically ill patients access to potentially life saving treatment, even when the chance of a meaningful recovery is remote. To complicate the decision making process further, the patient's response to treatment can rarely be anticipated with any degree of certainty. Admission static scoring systems exist, but have been designed as probabilistic methods for determining survival in ITU patients. They are accurate in terms of their calibration ie their ability to estimate the mortality of whole ITU populations, but they are not designed to predict outcomes for individual patients and are less accurate in terms of their ability to discriminate who will live and who will die [7,8].

There are fundamental differences between an ITU in the British National Health Care System, and the Field Hospital setting. The mechanism of injury and age of patients differs markedly from civilian practice in the UK [2]. Whilst we might wish to apply the same principles to admission of patients, their care and discharge, this may not always be possible within the confines of an Operational role. Critical care areas in a Field Hospital are also used to good effect to maintain the efficiency and capability of the Operating and Emergency Departments, when flexibility and capacity in the form of beds and staff exist. General guidelines exist for consideration of admission and discharge to a UK ITU (Boxes 1&2) [1,9]. These criteria may form a basis for decision making, but facilities available in a Field Hospital are different to those expected in an NHS hospital. Acute renal impairment or failure is

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a common complication of acute severe illness or trauma. The requirement for renal replacement therapy is determined by assessment of urine volume, fluid balance, renal concentrating ability, acid-base balance and rate of rise of serum potassium, urea and creatinine concentrations. Aggressive circulatory support may prevent renal impairment from progression to failure in the acute setting. There is currently no provision for renal replacement therapy in the Field Hospital. As the aeromedical evacuation chain is usually prompt, the requirement for renal support in coalition forces is exceptionally rare as acute renal failure usually develops over days rather than hours. In patients not eligible for transfer to a health care system with dialysis or filtration capability, the requirement in a Field Hospital for renal replacement therapy would represent an 'unmeetable need'. In a country where no renal replacement therapy service existed their long term health care needs would be unable to be met and in such circumstances it may be argued that there is no moral obligation to provide life sustaining health care. Even humanitarian agencies, such as the International Committee of the Red Cross, aim to provide a 'normal' health service in countries where they are actively involved and does not aim to provide 'extraordinary' care.

Should Intensive Care be Limited and if so, when?

To ensure a humane approach to the management of critically ill patients and ensure the limited resources of a Field ITU are utilised appropriately, identification of patients who are likely to benefit from intensive care and those patients who will not is important. In this second group, when there is no prospect of meaningful recovery, withholding, limiting, or withdrawing care becomes necessary. We must also endeavour to recognise a third group of patients who will make a good recovery without intensive care and these patients also should not be admitted. This means ITU care should be reserved for those patients with a reasonable chance of a good recovery [10]. As it is not always possible, or acceptable to discriminate between seriously ill patients before admission, patients may therefore be admitted to the ITU for a 'trial of treatment'. The effective use of intensive care, in these cases, may depend on the ability of clinicians to make decisions about limiting care when the patient becomes so ill that the prognosis is hopeless. To persist under these circumstances can be considered to be undignified and painful for the patient, in addition to upsetting and demoralising for the staff looking after them. In general it is not in the interests of a patient to prolong death in intensive care through the use of a scarce and operationally crucial resource. When resources are limited, it also becomes wasteful of care which may not then be available to another individual. It has been accepted that medical and nursing staff are not morally obliged to give 'extraordinary care' when it is; medically impossible or futile, provides no benefit in terms of prolonging life or relieving suffering, or the resulting burden on the patient is excessive in relation to the benefits [11]. 'Futility' is a non-quantitative expression of probability meaning different things even between different doctors [12]. The American College of Chest Physicians and Society of Critical Care Medicine and the American Thoracic Society (ATS) both prepared consensus statements regarding treatment withholding and withdrawal [13,14]. The ATS defined futility as an intervention which would be highly unlikely to result in meaningful survival to the patient. The Society of Critical Care Medicine's ethics committee produced a further statement which redefined futile treatment, devising a much narrower definition of futility including only those treatments that have no physiological effects. It further considered that treatments that are unlikely to be beneficial or are extremely costly should then be described as inappropriate and hence inadvisable [15]. Inappropriate use of intensive care facilities has implications beyond those of cost. In addition to adding to a patient's suffering and loss of dignity, care may merely prolong the dying process or maintain a life of

dubious quality. Resources and staff may be diverted from the care of other patients, especially important when multiple casualties arrive at the Field Hospital. A patient may benefit from intensive care, but if treatment of such an individual would directly harm the health of another patient by diverting resources, careful consideration must be made whether such care should be offered. The most difficult decisions arise when a patient who would benefit from ITU cannot access it due to reduced availability. In such situations explicit bedside rationing must occur. The ATS has cited that *'marginal beneficial intensive care may be justifiably limited on the basis of societal consensus that its cost is too high in relation to the value of its outcomes. Extraordinary expenditure of resources for marginal gain unfairly compromises the availability of a basic minimum level of healthcare for all'* [16].

Who Should Make the Decision Regarding Limiting, Withholding or Withdrawing Intensive Care?

Competent patients should be adequately informed of their condition and have the right to make their own decisions on refusing life-sustaining treatments, although they do not have the right to demand treatments deemed to be unnecessary or futile. However, as most ITU patients are unconscious or sedated they are unable to make such decisions. In the UK a surrogate may be required to determine their wishes, but this is less likely to be possible within a Field Hospital environment. ICU nurses are intimately involved with the patient and the UK Central Council for Nursing and Midwifery has a code of professional conduct which carries ethical implications for nurses [17]. It recommends that nurses should act as the patient's advocate, although it does not give them moral guidance or support on ethical issues. Indeed making these types of decision may not be a legitimate role for nurses especially as there is no recognition of this role in law. The practice of treatment withdrawal is undertaken by 96% of intensive care physicians surveyed in the USA [18] and is also widespread throughout Europe [19 - 21]. Physicians argue that unilateral judgements of futility and its consequences can be made even if this contravenes patient autonomy, but such unilateral decision making is not without risk. Senior clinicians working in an intensive care setting demonstrate a better level of discrimination in assessing the outcome of patients who are critically ill when compared to senior colleagues from other specialities or more junior intensive care doctors, suggesting that greater ITU experience may result in the physician being more able to recognise futile care and best placed to make decisions on admission, continuation and withdrawal of treatment [22].

When Should a Patient be Discharged from the ITU?

Discharge criteria from critical care units should reflect the admission criteria for the next level of care, the ward in the case of a Field Hospital. This occurs when; the patient's physiological status has stabilised and intensive care is no longer necessary, when the patient's condition has deteriorated and active interventions are no longer planned or available or the patient is evacuated.

Summary

The four principles, upon which all these decisions are based include: beneficence, non-maleficence, autonomy and social justice [23]. The Intensive Care Physician must make a judgement in all the patients' best interest, bearing in mind that a presumption in favour of preserving life must always predominate. The available resources should be distributed efficiently and equitably and the decisions guided by the principles of advocacy for the patient, collaboration between healthcare professionals, restriction of care on an equitable basis and the mechanism to plan alternative care if admission to the ITU is not available or appropriate [5].

Advanced Respiratory Support

Mechanical Ventilation (excluding CPAP and non invasive ventilation).

Possibility of a sudden deterioration in respiratory function requiring immediate endotracheal intubation.

Basic Respiratory Support

Need for FIO₂ >0.5

Patients recently extubated after prolonged intubation.

Possibility of progressive deterioration.

Patients who are intubated to protect the airway but do not require ventilatory support.

Need for mask CPAP or non-invasive ventilation.

Circulatory Support

Need for vasoactive drugs.

Support for circulatory instability due to hypovolaemia unresponsive to modest volume replacement.

Patients resuscitated after cardiac arrest.

Neurological Monitoring and Support

Central Nervous System depression obtunding the protective airway reflexes.

Invasive neurological monitoring.

Renal Support

Need for acute renal replacement therapy.

Box 1. Indications for ITU admission include patients requiring or suffering from:

Age and physiological reserve

Diagnosis and prognosis

Co-morbidities

Availability of treatment

Response to treatment to date

Quality of life pre and post treatment

Severity of illness

Patient's wishes/religious beliefs if known

Box 2. Other factors affecting suitability for ITU admission.

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SCORING SYSTEMS AND THEIR POSSIBLE USE IN A MILITARY ICU SETTING

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Abstract

Scoring systems for both trauma and intensive care patients have been widely used since the 1960's. This article will introduce several scoring systems currently in use and discuss their potential use for military ICU patients.

Introduction

There are few areas of medicine that do not routinely collect data

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from patients and attempt to collate them into easily usable numbers to guide clinical practice. Perhaps the best known of these is the Glasgow Coma Scale (GCS), but many more of increasing complexity have been developed. All scoring systems attempt to objectively compare groups of patients, in order that meaningful comparisons can be made. This allows the clinician to: