

Guidelines for intensive care unit admission, discharge, and triage

Task Force of the American College of Critical Care Medicine,
Society of Critical Care Medicine

Objective: To provide guidelines for admission, discharge, and triage of adult patients to the intensive care unit (ICU), based on expert opinion and the relevant literature.

Data Sources: Publications relevant to the admission, discharge, and triage of patients to the ICU were obtained from the medical literature.

Study Selection: Note applicable.

Data Extraction: Articles were reviewed and the relevant information extracted for analysis by an expert panel.

Data Synthesis: The articles were reviewed and graded levels of recommendation made based on a rating system described in the text.

Conclusions: Although little scientifically rigorous data exist validating the criteria for admission, discharge, and triage of adult patients to the ICU, current literature and expert opinion support guidelines to streamline the admission, discharge, and triage process. (*Crit Care Med* 1999; 27: 633–638).

Key words Critical care – intensive care – adults – admission – discharge – triage – criteria – guidelines – protocols – policy – administration – diagnosis – prioritization – parameters – prognostic scoring systems – performance

Appropriate utilization of intensive care unit (ICU) resources is an important issue as the nation struggles to contain healthcare expenditures. The guidelines proposed here provide models which ICUs may use in formulating admission, discharge, and triage criteria. A process for implementation, monitoring, and performance review of policies and procedures is also included.

The ICU concept prevalent today proliferated in the 1960s [1–3]. The first Consensus Conference on Critical Care Medicine led by the National Institutes of Health in 1983 pointed out that clinical practice has led to expanded indications for admissions to critical care units [4]. Most physicians are of the opinion that the benefits of ICU care are unmeasured rather than uncertain [5]. Because of the utilization of expensive resources. ICUs should, in general, be reserved for those patients with reversible medical conditions who have a “reasonable prospect of substantial recovery” [4–6]. With recent changes in the healthcare environment, efficient use of ICUs has become a priority. Unfortunately, few studies have examined the indications for, and the outcome of ICU care [7–10]. Those that have suggest that we may not be categorizing patients accurately. For example, Kraiss et al. [8] evaluated 196 patients undergoing carotid endarterectomy over a 2-yr period. There was no difference in outcome or complications between the group admitted to intensive care and those admitted to a general ward [8].

The Ethic Committee of Society of Critical Care Medicine has previously published a consensus statement on triage [11]. Guidelines for developing admission and discharge criteria were also proposed [12]. The current document is a compilation and revision of the previously published guidelines.

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These guidelines have been developed by the American College of Critical Care Medicine, Society of Critical Care Medicine, and thereafter reviewed by the Council of the Society of Critical Care Medicine. The opinions expressed herein reflect the official opinion of the Critical Care Medicine, and should not be construed to reflect the view of the specialty boards or any other professional medical organization.

Editor's Note: As with previous guidelines published in this journal, these guidelines have not undergone traditional peer review. See *Crit Care Med* 1991; 19: 137 and 1992; 21: 447.

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Individual ICUs, using the guidelines presented below, should create policies specific to their unit. Criteria for ICU admission and discharge should be explicitly described. In addition, each ICU should define the scope of services provided and the patient population served, as approved by the professional staff. Specific circumstances under which the patients are admitted should also be defined [12–14]. Guidelines and implementation policy should be written by a multiprofessional team. While the composition of the ICU Committee may vary, it should assure an adequate voice for those who regularly provide service to ICU patients, including respiratory care practitioners, nurses, physicians, and social workers.

The ICU Committee should review the policies of the intensive and intermediate care units. The Committee should also help educate the staff on admission/discharge/triage criteria, and efficient resource consumption.

Policies written for admission, discharge, and triage should be reviewed on a regular basis and revised as needed. Revisions should be based on objective data. Compliance with the policy should be monitored in an appropriate forum which, in most institutions, would be the ICU Committee. A policy should be in place for accommodating admissions when unit capacity is reached. Options may include limiting elective surgery or re-routing critical care admissions from the emergency department. Increasing the functional capacity of the ICU by boarding patients in other advanced care areas (assuming appropriate personal and technological resources are available) may be an alternative to limiting services.

The admission, discharge, and triage criteria should also recognize patient autonomy, including advance directives, such as living wills, or durable powers of attorney for healthcare decisions. It also should indicate who can admit patients to the ICU. Specific credentialing procedures should be in place.

Levels of recommendations for the intensive care unit

The ICU serves as a place for monitoring and care of patients with potentially severe physiological instability requiring technical and/or artificial life support. The level of care in an ICU is greater than that available on the floor or intermediate care unit.

Rating system

Level 1: Convincingly justifiable on scientific evidence alone.

Level 2: Reasonably justifiable by available scientific evidence and strongly supported by expert critical care opinion.

Level 3: Adequate scientific evidence is lacking but widely supported by available data and critical care expert opinion.

Recommendations

1. (Level 3) The ICU should have designated medical and nursing directors who are responsible for assuring appropriate patient triage through enforcement of patient admission and discharge criteria. This triage must consider the needs of the patient and institution.

2. (Level 3) The physician and nurse directors should determine the limits of care, telemetry, mechanical ventilation, and types of intravenous medications.

3. (Level 3) ICU Committee – A multiprofessional committee should be involved in developing and implementing the admission and discharge criteria.

4. (Level 2) The provision of intensive care improves the outcome of critically ill patients.

5. (Level 2) An intensivist-led multiprofessional team improves the the outcomes of critically ill patients as measured by mortality, length of stay, and resource consumption [15, 16].

Admission criteria

ICU admission criteria should select patients who are likely to benefit from ICU care [2]. Griner [10] identified two conditions in which ICU care was of no greater benefit than conventional care. Situations involved patients who were at the two extremes of the risk of death spectrum; relatively low risk of death and exceedingly high risk of death. These groups can be referred to as “too well to benefit” and “too sick to benefit” from critical care services. ICU care has been demonstrated to improve outcome in severely ill, unstable patient populations [17, 18]. Defining the “too well to benefit” and “too sick to benefit” population may be difficult solely based on diagnosis [7, 19–24]. For example, drug overdose patients are commonly admitted to an ICU. However, Brett et al. [19] demonstrated that patients without clinically determined high-risk criteria never required ICU interventions. Nonetheless, 70% of these low-risk patients were admitted to an ICU for observation.

In addition to difficulties in determining the patient populations who are too well or too sick to benefit, the specific criteria defining “substantial benefit” are subject to interpretation. For example, Paz et al. [21] examined admissions to the medical ICU following bone marrow transplantation. Bone marrow transplantation patients undergoing mechanical ventilation had an ICU discharge rate of only 3.7% compared with a discharge rate of 81.3% for

those patients not requiring this therapy [21]. Previously published reports [22–24] documented similarly poor survival rates for ventilator-requiring bone marrow transplantation patients (2.5% to 7.0%). Whether a 2.5% to 7% discharge rate of bone marrow transplantation patients requiring mechanical ventilation is substantial or not may depend on the institution. These interpretations will lead to differences in admission criteria among institutions and physicians.

Thus it is recommended that ICU practitioners understand tools for assessing severity of illness and prognosis of critically ill patients. These instruments, in conjunction with clinical judgment, represent the best tools currently available to determine prognosis [11, 25–27]. It should be noted, however, that in general, these predictive instruments have only been applied to patients who have already been admitted to an ICU and have not been tested as pre-admission screening tools. The ICU admission decision may be based on several models, utilizing prioritization, diagnostic, and objective parameter models. We wish to emphasize that these models are presented as guidelines and individual institutions must create specific criteria to meet their special requirements

Prioritization model

This system defines those that will benefit most from the ICU (Priority 1) to those that will not benefit at all (Priority 4) from ICU admission.

Priority 1: These are critically ill, unstable patients in need of intensive treatment and monitoring that cannot be provided outside of the ICU. Usually, these treatments include ventilator support, continuous vasoactive drug infusion, etc.

Priority 1 patients generally have no limits placed on the extent of therapy they are to receive. Examples of these patients may include postoperative or acute respiratory failure patients requiring mechanical ventilatory support and shock or hemodynamically unstable patients receiving invasive monitoring and/or vasoactive drugs.

Priority 2: These patients require intensive monitoring and may potentially need immediate intervention. No therapeutic limits are generally stipulated for these patients. Examples include patients with chronic co-morbid conditions who develop acute severe medical or surgical illness.

Priority 3: These unstable patients are critically ill but have a reduced likelihood of recovery because of underlying disease or nature of their acute illness.

Priority 3 patients may receive intensive treatment to relieve acute illness, however, limits on therapeutic efforts may be set, such as no intubation or cardiopulmonary resuscitation. Examples include patients with metastatic malignancy complicated by infection, cardiac tamponade, or airway obstruction.

Priority 4: These are patients who are generally not appropriate for ICU admission. Admission of these patients should be on an individual basis, under unusual circumstances, and at the discretion of the ICU Director. These patients can be placed in the following categories.

A. Little or no anticipated benefit from ICU care based on low risk of active intervention that could not safely be administered in a non-ICU setting (too well to benefit from ICU care). Examples include patients with peripheral vascular surgery, hemodynamically stable diabetic ketoacidosis, mild congestive heart failure, conscious drug overdose, etc.

B. Patients with terminal and irreversible illness facing imminent death (too sick to benefit from ICU care). For example: severe irreversible brain damage, irreversible multiorgan system failure, metastatic cancer unresponsive to chemotherapy and/or radiation therapy (unless the patient is on a specific treatment protocol), patients with decision-making capacity who decline intensive care and/or invasive monitoring and who receive comfort care only, brain-dead non-organ donors, patients in a persistent vegetative state, patients who are permanently unconscious, etc.

Diagnosis model

This model uses specific conditions or diseases to determine appropriateness of ICU admission.

1. Cardiac System
 - A. Acute myocardial infarction with complications
 - B. Cardiogenic shock
 - C. Complex arrhythmias requiring close monitoring and intervention
 - D. Acute congestive heart failure with respiratory failure and/or requiring hemodynamic support
 - E. Hypertensive emergencies
 - F. Unstable angina, particularly with dysrhythmias, hemodynamic instability, or persistent chest pain
 - G. S/P cardiac arrest
 - H. Cardiac tamponade or constriction with hemodynamic instability
 - I. Dissecting aortic
 - J. Complete heart block
2. Pulmonary System
 - A. Acute respiratory failure requiring ventilatory support
 - B. Pulmonary emboli with hemodynamic instability
 - C. Patients in an intermediate care unit who are demonstrating respiratory deterioration
 - D. Need for nursing/respiratory care not available in lesser care areas such as floor or intermediate care unit
 - E. Massive hemoptysis
 - F. Respiratory failure with imminent intubation

3. Neurologic Disorders
 - A. Acute stroke with altered mental status
 - B. Coma: metabolic, toxic, or anoxic
 - C. Intracranial hemorrhage with potential for herniation
 - D. Acute subarachnoid hemorrhage
 - E. Meningitis with altered mental status or respiratory compromise
 - F. Central nervous system or neuromuscular disorders with deteriorating neurologic or pulmonary function
 - G. Status epilepticus
 - H. Brain-dead or potentially brain-dead patients who are being aggressively managed while determining organ donation status
 - I. Vasospasm
 - J. Severely head-injured patients
4. Drug Ingestion and Drug Overdose
 - A. Hemodynamically
 - B. Drug ingestion with significantly altered mental status with inadequate airway protection
 - C. Seizure following drug ingestion
5. Gastrointestinal Disorders
 - A. Life-threatening gastrointestinal bleeding including hypotension, angina, continued bleeding, or with comorbid conditions
 - B. Fulminant hepatic failure
 - C. Severe pancreatitis
 - D. Esophageal perforation with or without mediastinitis
6. Endocrine
 - A. Diabetic ketoacidosis complicated by hemodynamic instability, altered mental status, respiratory insufficiency, or severe acidosis
 - B. Thyroid storm or myxedema coma with hemodynamic instability
 - C. Hyperosmolar state with coma and/or hemodynamic instability
 - D. Other endocrine problems such as adrenal crises with hemodynamic instability
 - E. Severe hypercalcemia with altered mental status, requiring hemodynamic monitoring
 - F. Hypo- or hypernatremia with seizures, altered mental status
 - G. Hypo- or hypermagnesemia with hemodynamic compromise or dysrhythmias
 - H. Hypo- or hyperkalemia with dysrhythmias or muscular weakness
 - I. Hypophosphatemia with muscular weakness
7. Surgical
 - A. Postoperative patients requiring hemodynamic monitoring/ventilatory support or extensive nursing care
8. Miscellaneous
 - A. Septic shock with hemodynamic instability
 - B. Hemodynamic monitoring

- C. Clinical conditions requiring ICU-level nursing care
- D. Environmental injuries (lightning, near drowning, hypo/hyperthermia)
- E. New/experimental therapies with potential for complications

Objective parameter model

Objective criteria have been requested, expected, and reviewed from individual hospitals as part of the Joint Commission on Accreditation of Healthcare Organizations review process of special care units in the past.

While the review process has recently been changed [13], it is understandable that hospitals would continue to incorporate objective parameters as part of the admitting criteria. The criteria listed, while arrived at by consensus, are by necessity arbitrary. They may be modified based on local circumstances. Data demonstrating improved outcome using specific criteria levels are not available.

1. Vital Signs
 - A. Pulse <40 or >150 beats/min
 - B. Systolic arterial pressure <80 mmHg or 20 mmHg below the patient's usual pressure
 - C. Mean arterial pressure <60 mmHg
 - D. Diastolic arterial pressure >120 mmHg
 - E. Respiratory rate >35 breaths/min
2. Laboratory Values (newly discovered)
 - A. Serum sodium <110 mEq/L or >170 mEq/L
 - B. Serum potassium >2.0 mEq/L or >7 mEq/L
 - C. PaO₂ <50 torr (6.67 kPa)
 - D. pH <7.1 or >7.7
 - E. Serum glucose >800 mg/dL
 - F. Serum calcium >15 mg/dL
 - G. Toxic level of drug or other chemical substance in a hemodynamically or neurologically compromised patient
3. Radiography/Ultrasonography/Tomography (newly discovered)
 - A. Cerebral vascular hemorrhage, contusion, or subarachnoid hemorrhage with altered mental status or focal neurologic signs
 - B. Ruptured viscera, bladder, liver, esophageal varices or uterus with hemodynamic instability
 - C. Dissecting aortic aneurysm
4. Electrocardiogram
 - A. Myocardial infarction with complex arrhythmias, hemodynamic instability or congestive heart failure
 - B. Sustained ventricular tachycardia or ventricular fibrillation
 - C. Complete heart block with hemodynamic instability

5. Physical Findings (acute onset)
 - A. Unequal pupils in an unconscious patient
 - B. Burns covering <10% body surface area
 - C. Anuria
 - D. Airway obstruction
 - E. Coma
 - F. Continuous seizures
 - G. Cyanosis
 - H. Cardiac tamponade

Discharge criteria

The status of patients admitted to an ICU should be revised continuously to identify patients who may no longer need ICU care.

- A. When a patient's physiologic status has stabilized and the need for ICU monitoring and care is no longer necessary.
- B. When a patient's physiologic status has deteriorated and active interventions are no longer planned, discharge to a lower level of care is appropriate.

Discharge criteria from critical care units should be similar to the admitting criteria for the next level of care such as intermediate care where available [28]. However, not all patients require intermediate care after ICU discharge.

Triage

Under ideal conditions, patients would be admitted or discharged strictly on their potential to benefit from ICU care. Unfortunately in many instances the number of potential ICU patients exceeds the available beds. A method of prioritizing or triaging patients is necessary [11, 29]. Initial triage of patients may follow the guidelines given in prioritization model for admissions. In an environment where ICU admissions are rigorously screened for benefit, and discharge is ongoing and continuous, the need for triage is minimized.

When all ICUs and step-down units are filled, the ICU/Critical Care Director should have access to all of these units and have the responsibility and authority to admit/discharge patients from these units. Triage policies for an institution should be written in advance. Triage decisions should be made explicitly and without bias. Ethnic origin, race, sex, social status, sexual preference, or financial status should never be considered in triage decisions. Triage decisions may be made without patient or surrogate consent, and can be made despite an anticipated untoward outcome. A physician should not feel compelled to provide treatment that is not medically indicated. Religious or

moral convictions may be the basis for providing this treatment "if the costs are not borne by the general society and the provision of such services does not foreclose the treatment of other patients who would benefit from critical care" [30]. The topic of Triage of Critically Ill Patients has been recently reviewed by the Society of Critical Care Medicine Ethics Committee [11]. The reader is referred to this document for a more in-depth discussion of this topic.

Performance review

The performance evaluation and review of an ICU should include its admission/discharge/triage policy. A multiprofessional team should review performance at least annually. In order to adequately review performance as it relates to admission, outcome, and the decision-making process, as database able to track these and other variables would be extremely useful. Severity-adjusted outcomes should be utilized whenever possible, to minimize the effect of severity of illness on raw mortality data, independent of policy or care standards. The incidence of low-risk monitor-only patients can be used to gauge the efficiency of the admission process. As guidelines to limit these types of admissions are instituted, care must be taken to track the patients sent to other areas to assure equivalency of outcome, length of stay, etc. A mechanism to review requested admissions that were denied should be in place to assure appropriateness of both the policy and the decision-making process. Conflicts over discharges should be reviewed so that possible improvements in the discharge policy can be identified and incorporated. Readmissions to the ICU for a similar problem should be monitored closely as they may directly relate to the quality of the discharge process [31–33]. The quality and efficiency of an ICU should be continually examined and improved through this process. Studies examining objective criteria for admission and benefit of admission to ICUs should be encouraged in order to better define appropriate utilization of this important and expensive resource.

Administrative recommendations to facilitate appropriate admissions, discharges, and delivery of care in intensive care units

- A. Personal
 1. A Physician Director must be appointed who, on the basis of training, interest, type of practice, and availability, can give clinical, administrative, and educational direction to the ICU. The Physician Director should meet guidelines for the definition of an intensivist published by the Society of Critical Care

Medicine [34]. Collaboration with nursing and ancillary staff should be emphasized. The Director should assume responsibility for assuring the quality, safety, and appropriateness of care in the ICU. The Director must work collaboratively with the Directors of other areas in the institution so that patient care, triage, and patient flow are effective and efficient. The ultimate authority for ICU admission, discharge, and triage rests with the ICU Director.

2. An ICU Director has the responsibility to ensure that the patients meet ICU admission and discharge criteria. Formal recognition of the role of the ICU Director should occur through established hospital pathways. A knowledge of the various prognostic models is required of the ICU Director [11]. A

clearly written procedure for conflict resolution as it relates to admission and discharge of patients must be in place.

3. The multiprofessional team of professionals should meet on a regular basis to identify and solve problems through quality assurance and continuous quality improvement activities.

Summary

The ICU can provide efficient and effective care to the critically ill patients by implementing well thought out admission, discharge, and triage policies and procedures.

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