



EPAT

Emergency Physicians
Association of Turkey

WHICH PATIENT SHOULD BE IN ICU ?

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IMPORTANCE





- ▶ Limited and expensive resources
- ▶ The cost of critical care in the United States was estimated to range between \$121 and \$263 billion in 2008
- ▶ Crowded intensive care units, delayed admissions of critical ER patients, care delays and other delivery inefficiencies are also problematic issues



HISTORY

- These concerns forced the medical community to act smarter and evidence based on this matter
- Thus; in 1999, the Society of Critical Care Medicine (SCCM) published guidelines for ICU admission, discharge and triage
- Given the fact that medical expenses are not getting smaller and emergency rooms and intensive care units are not getting emptier; the topic is still a current challenge for both intensive and emergency care givers

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- It's reasonable to develop policies to meet specific population needs (such as trauma, burns, neurological pathologies, sepsis etc) and take into consideration the institutional limitations such as ICU size and therapeutic capabilities or number of medical staff



To optimize resource use while improving outcomes, hospitals should guide ICU admissions on the basis of a combination of various parameters

Specific patient needs that can be addressed only in the ICU environment such as life supportive therapies

Available clinical expertise

Prioritization according to the patient's condition

Diagnosis

Bed availability

Objective parameters at the time of referral (such as respiratory rate)

Potential for the patient to benefit from interventions

Prognosis



**Prioritization
Model**

**Diagnosis
Model**

**Objective
Parameters
Model**



DECIDING PRIORITIES

PRIORITIZATION MODEL

- Patients are categorized by four priority levels based on how likely they are to benefit from admission to the ICU

Level of Care	Priority	Type of Patient
ICU	Priority 1	Critically ill patients who require life support for organ failure, intensive monitoring, and therapies only provided in the ICU environment. Life support includes invasive ventilation, continuous renal replacement therapies, invasive hemodynamic monitoring to direct aggressive hemodynamic interventions, extracorporeal membrane oxygenation, intraaortic balloon pumps, and other situations requiring critical care (e.g., patients with severe hypoxemia or in shock)
	Priority 2	Patients, as described above, with significantly lower probability of recovery and who would like to receive intensive care therapies but not cardiopulmonary resuscitation in case of cardiac arrest (e.g., patients with metastatic cancer and respiratory failure secondary to pneumonia or in septic shock requiring vasopressors)

DIAGNOSIS MODEL

- A list of specific conditions and diseases is offered for deciding which patients should be admitted to the ICU

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

implications

e monitoring

spiratory fail-

pport

Gastroi

A. I: f

Miscellaneous

- A. Septic shock with hemodynamic instability
- B. Hemodynamic monitoring
- C. Clinical conditions requiring ICU-level nursing and medical care
- D. Environmental injuries (lightning, near drowning, hypothermia/hyperthermia)
- E. New/experimental therapies with potential for complications
- C. Seizures
- I. Hypophosphatemia with muscular weakness

crises

tus, re-

lysrhythmias,

t chest pain

with hemody-

Complete heart block



OBJECTIVE PARAMETERS MODEL

- ▀ Specific vital signs, laboratory values, imaging or electrocardiogram findings and physical findings are offered for deciding which patients should be admitted

All these models have limitations and none have
been properly validated

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LITERATURE

- Cohen et al have suggested that admissions to the ICU should be based on functional impairment, rather than just severity of illness
- They showed that functional impairment at the time of intensivist evaluation was the determining factor influencing ICU acceptance
- Patients were less likely to be admitted if their functional status was poor or they had a do-not-resuscitate order

Minerva Anesthesiol. 2012 Nov;78(11):1226-33. Epub 2012 Jun 14.

Admission decisions to a medical intensive care unit are based on functional status rather than severity of illness. A single center experience.

Cohen RI¹, Eichorn A, Silver A.



LITERATURE

- McGillicuddy et al reviewed their data after starting a program in which abnormal vital signs were used as criteria to trigger patients to be admitted to an ICU until their condition improved or stabilized

Acad Emerg Med. 2011 May;18(5):483-7. doi: 10.1111/j.1553-2712.2011.01056.x. Epub 2011 Apr 26.

Emergency department abnormal vital sign "triggers" program improves time to therapy.

McGillicuddy DC¹, O'Connell FJ, Shapiro NI, Calder SA, Mottley LJ, Roberts JC, Sanchez LD.

LITERATURE

- Farley et al suggested that respiratory rate alone should be a major determinant for ICU admission
- But there is not a reliable list of objective indicators or their respective specific thresholds for identifying candidates for ICU admission

Acad Emerg Med. 2010 Jul;17(7):718-22. doi: 10.1111/j.1553-2712.2010.00796.x.

Emergency department tachypnea predicts transfer to a higher level of care in the first 24 hours after ED admission.

Farley H¹, Zubrow MT, Gies J, Kolm P, Mascioli S, Mahoney DD, Weintraub WS.

LITERATURE

- Lamantia et al have shown that the sensitivity and the specificity of abnormal vital signs to predict death or ICU admission at triage were only 73% and 50%, respectively

West J Emerg Med. 2013 Sep;14(5):453-60. doi: 10.5811/westjem.2013.5.13411.

Predictive value of initial triage vital signs for critically ill older adults.

Lamantia MA¹, Stewart PW, Platts-Mills TF, Biese KJ, Forbach C, Zamora E, McCall BK, Shofer FS, Cairns CB, Busby-Whitehead J, Kizer JS.

LITERATURE

Sprung et al investigated the feasibility of using a triage score to assist in deciding about ICU admissions

The score incorporated :

- Age
- Diagnosis
- Systolic blood pressure/ pulse/ respiratory rate/ PaO₂
- Concentrations of creatinine, bilirubin, bicarbonate and albumin
- Vasopressor use/ glasgow coma scale score
- Karnofsky performance status score
- Operative status
- Chronic disorders

The Eldicus prospective, observational study of triage decision making in European intensive care units: part I--European Intensive Care Admission Triage Scores.


Sprung CL¹, Baras M, Iapichino G, Kesecioglu J, Lippert A, Hargreaves C, Pezzi A, Pirracchio R, Edbrooke DL, Pesenti A, Bakker J, Gurman G, Cohen SL, Wiis J, Payen D, Artigas A.

qSOFA

➤ qSOFA score is easy to calculate since it only has three components each of which are readily identifiable at the bedside and are allocated one point

- 2016 SCCM/ESICM task force have described an assessment score for patients outside the intensive care unit as a way to facilitate the identification of patients potentially at risk of dying from sepsis
- This score is a modified version of the Sequential (Sepsis-related) Organ Failure Assessment score (SOFA) called the quickSOFA (qSOFA) score
- A score ≥ 2 is associated with poor outcomes due to sepsis

- Respiratory rate ≥ 22 /minute
- Altered mental status
- Systolic blood pressure ≤ 100 mmHg

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- In 1999, a group of experts appointed by the Department of Health in the United Kingdom suggested that patients in hospital should be assigned a level of care based on an assessment of their clinical needs, regardless of their care location

In their review of critical care services published in 2000, they described these levels as

Level 0: Regular hospitalized patients with no intensive monitoring or care requirements

Level I: Patients requiring additional monitoring such as continuous electrocardiographic monitoring

Level II: Patients requiring more frequent monitoring and interventions, such as those with single-organ dysfunction, which cannot be provided in the previous levels

Level III: Patients requiring life-supportive therapies, such as those with single- or multiorgan failure, which can only be provided in the ICU

GUIDELINES

- Recently, Society of Critical Care Medicine published guidelines which also questioned ICU admission criteria



Crit Care Med. 2016 Aug;44(8):1553-602. doi: 10.1097/CCM.0000000000001856.

ICU Admission, Discharge, and Triage Guidelines: A Framework to Enhance Clinical Operations, Development of Institutional Policies, and Further Research.

Nates JL¹, Nunnally M, Kleinpell R, Blosser S, Goldner J, Birriel B, Fowler CS, Byrum D, Miles WS, Bailey H, Sprung CL.

GUIDELINES

Avoid admitting patients to a specialized ICU whose primary diagnosis is not associated with that specialty (Grade 2C)

Admit neurocritically ill patients to a neuro-ICU, especially those with a diagnosis of intracerebral hemorrhage or head injury (Grade 2C)

Each institute should develop individual methods for prioritizing and triaging patients (Ungraded)

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 (Ungraded)

Under ideal conditions, patients should be admitted or discharged strictly on their potential to benefit from ICU care (Ungraded)

GUIDELINES

Require care involving specialized competency of ICU staff that is not widely available elsewhere in the hospital (e.g., invasive mechanical ventilation, management of shock, extracorporeal membrane oxygenation and intraaortic balloon pump)

Have clinical instability (e.g., status epilepticus, hypoxemia and hypotension)

Be at high risk for imminent decline (e.g., impending intubation)



WHO SHOULD MAKE THE DECISION ?

It is reasonable to have a designated person or service with control over resources and active involvement to be responsible for making ICU triage decisions during normal or emergency conditions

Terminal Cancer Patients

- In particular cancer patients with advanced disease it is reasonable to discuss care options with the patient, next of kin, legal representative or power of attorney
- Oncologist or hematologist opinion regarding life expectancy and palliative solutions should be taken into consideration



ICU Triage in Epidemics

- Nontraditional settings should be considered and utilized for the care of critically ill patients
- Using routine laboratory studies or scoring systems alone in determining the nature of illness during an epidemic might be misleading
- All hospitals and regional areas should develop a coordinated triage plan for epidemics





ICU Triage in MCI

- ▶ Disaster response teams should identify all patients in need of ICU care and those already hospitalized who could be discharged
- ▶ Then triage and transfer incoming patients to the most appropriate setting as soon as possible

Thank you...

