

# Admission Criteria in Intensive Care Units Following an Objective Evaluation or a Personal Decision

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## Letter to Editor

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In volume 2, issue 1, Amer AM et al. published the article "ICU Admission Patterns in Patients with DKA, Stroke and GI Bleed: do they all need ICU?" [1]. Intensive Care Units (ICUs) are among the most expensive compartments of all the hospitals. Thus, we tend to limit, as much as possible, admission to ICU, according to very precise criteria. Apart from costs, the places in ICUs are limited and, in most cases, seem to be insufficient, especially in emergency hospitals. The anesthesiologists usually have to classify the patients and to decide which of them should be admitted in intensive care unit. There has been a drastic growth in critical care beds in hospitals all over the world. This trend is partially due to hospital efforts to accommodate the escalating growth of the elderly population. However, a massive amount of open ICU beds can lead to an upsurge of inappropriate usage of critical care services [1]. The authors found a high percentage (76%) of patients admitted inappropriate to ICU among the patients that had no clear admission criteria. Patients with indubitable criteria, such as patients in a comatose state, intubated, on vasopressors, hemo-dynamically unstable or who had an unstable comorbid disease, subarachnoid hemorrhage, surgery during hospitalization prior to the ICU admission were excluded.

The admission criteria in ICUs should be adapted to the possibilities of each hospital to treat and manage patients in non-critically ill compartments (wards).

Sometimes, ICU admission is made after a discussion between the treating physician and the anesthesiologist, rather than applying strict and objective criteria. The ICU admission rate seems to be higher during the night, with no objective supplementary admission criteria compared to the same condition during the day, but as a consequence of fear of an unexpected patients' outcome. Patients hospitalized by night in acute conditions are more likely to follow the route from emergency department directly in ICU.

We can consider an appropriate ICU admission for patients that need intubation, vasopressors, cardiopulmonary resuscitation, or when urgent surgical intervention is required, related to primary diagnosis.

Hyponatremia, defined as serum sodium level  $<135\text{meq/l}$ , seem to be a valuable parameter for admission in ICU and could predict the outcome and prognosis [2]. Overall mortality among the hyponatremic ICU admissions was found 34.6% in a study [3], which was higher than the total ICU mortality. We should consider hyponatremia also when judging the critical state of a patient. The interdependence between acute morbidity and ICU admission has been proved [4].

Hyperkalemia is another dyselectrolythemia that requires attention and is a criterion of ICU management. Potassium is a key electrolyte for the maintenance of

cardiovascular system health, being involved in a broad array of vital physiological processes. Hyperkalemia is a common clinical problem and potentially life-threatening condition predominantly seen in patients with cardiac and kidney disease, especially if receiving treatment with inhibitors of the renin-angiotensin-aldosterone axis. Several studies have demonstrated the short and long-term morbidity and mortality that hyperkalemia induces in patients with cardiovascular diseases [5].

The authors of the study [1] found that, among the four studied diagnostics, gastrointestinal bleedings seemed to have an appropriate rate of admission in ICU (approximately half of them). On the other hand, a prolonged stay in ICU and the critical condition of the patient determine stress gastropathy and stress ulcer [6] that could worsen the prognosis or aggravate the preexistent gastrointestinal bleeding. The condition appears in more than 50% of the patients at high risk. Hemorrhagic shock is a strong prognostic factor. In a study on 610 patients with gastrointestinal bleeding admitted to ICU, all the patients who died (38%) presented hemorrhagic shock upon admission, which highlights its prognostic value. Haemorrhagic shock occurred only in 23% of the cases who survived [7].

Upper gastrointestinal bleeding recognizes a case ratio of 3:2 males versus females; its incidence strongly correlates with increased age, 20 to 30 times higher in 70-80 year old patients compared with patients in the second decade of life. The lethality in Europe averages around 4-5% for less than 60 years old patients to more than 20% in patients over 80 years old. The mortality range for gastroesophageal varices is 4-20% [8].

Another clinical condition that requires admission in ICU is abdominal compartment syndrome that could become a surgical emergency [9]. Abdominal compartment syndrome is defined as hypoperfusion and ischemia of intra-abdominal viscera and structures caused by raised intra-abdominal pressure (above 20 mmHg). It occurs most commonly following major trauma and complex surgical procedures, but can also occur in their absence, for instance in acute pancreatitis [10]. Abdominal compartment syndrome and intra-abdominal hypertension are not two entities that can be ignored by a surgical or non-surgical clinician.

The high rates of mortality and morbidity should be an attention signal for the learning curve of managing a critically ill patient. Intra-abdominal hypertension and abdominal compartment syndrome are significant causes of organ failure, high resource utilization, and high mortality among a wide variety of patients.

In conclusion, as the authors Amer AM, et al. [1] said, there is a substantial overuse of ICU admissions. On the other hand, we need to be aware and recognize the existing criteria and even add additional admission criteria to ICU. We never have to doubt when the transfer to the ICU is required.

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