

Clinical Practice Committee Statement:

Mortality Related to Delay of ICU Patient Transfer from the Emergency Department (11/14/2011)

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Reviewed and approved by the AAEM Board of Directors 11/14/2011.

Critically ill emergency department (ED) patients that require admission to the intensive care unit (ICU) often utilize significant personnel, time, and equipment when compared to patients who do not require ICU level care. In many EDs, critical resources can quickly be depleted. This has the potential to adversely affect the care provided to these critically ill patients and runs the risk of diminishing care to all ED patients. In this practice guideline we evaluate the literature related to the length of ED stay and its effect on patient mortality for critically ill patients awaiting ICU admission.

Executive Summary

1. Patients should be transferred to the ICU from the emergency department as soon as possible, as delays in transfer lead to increasing mortality.

The ICU is well-suited for patients who have complex and critical medical conditions. They can coordinate multi-specialty care (e.g. cardiology, gastroenterology) with greater ease as well as anticipate recurring needs for patients (i.e. repeat dosing of antibiotics.) They are able to regulate patient influx into the unit if their staff is overwhelmed. In contrast, most EDs do not have the same resources. When a critically ill patient remains in the ED, crucial resources may be overwhelmed thereby creating a potentially dangerous patient-care environment. The longer the patient remains in the emergency department, the more likely that their care is going to be compromised.

The most relevant and influential study evaluating this issue was published by Chalfin et al [1]. The study is a retrospective cohort of more than 50,000 patients that evaluates the effect of delayed transfer of critically ill patients from the ED to the ICU on ICU/hospital survival, length of stay, and total cost of care. The results demonstrated that critically ill patients who had more than a 6 hour delay in ICU transfer had an increased ICU mortality (10.7% vs. 8.4% (p<0.01), in-hospital mortality (17.4% vs. 12.9% (p<0.001) and median hospital LOS (7.0 days vs. 6.0 days (p<0.001).

Cline et al conducted a retrospective chart analysis of 78 critically ill patients who required intubation and mechanical ventilation [2]. Their results demonstrated that patients who were transferred to the ICU in an “expedited” fashion (< 2 hours) had a significantly shorter

duration of mechanical ventilation (28.4 hours vs. 67.9 hours; $P = .0431$), mean ICU length of stay (2.4 days vs. 4.9 days; $P = .0209$) and overall length of hospital stay (6.8 days vs. 8.9 days; $P = .0609$).

Cardoso et al designed a prospective cohort study of 401 adult patients admitted to the ICU to evaluate correlation between mortality and delay in ICU admission from the ED [3]. The results demonstrated an increased mortality rate with delayed admissions to the ICU: 43.4 % mortality with a 2-12 hour delay, 46.2% mortality with a 12-18 hour delay, and 52% mortality with an 18-24 hour delay. Each hour of delayed transfer to the ICU was independently associated with a 1.5% increased risk of ICU death (hazard ratio (HR): 1.015; 95% CI 1.006 to 1.023; $P = 0.001$).

The final study evaluated in this review is by Duke et al and is a prospective cohort study of 619 consecutive ED patients with acute respiratory or renal failure that were admitted to the ICU within 24 hours of their ED arrival [4]. The results showed a significant difference in mortality in those patients with delayed transfer to the ICU. Those who did not survive their ICU stay had a median transfer time of 4.4 hours compared to survivors who had a transfer time of 3.8 hours ($p < 0.0003$). The relative risk of death increased 6% per hour of delayed transfer to the ICU.

Based upon the available literature, we conclude that patients who require admission to the ICU benefit from expedited transfer out of the ED. While many emergency physicians can adeptly handle critically ill patients during the early course of their illness; the many facets of critical care require personnel, equipment, and significant time commitments that are often in short supply in busy EDs. It is not reasonable to expect that adequate ventilator management, end-organ perfusion assessment, and titration of medications can be performed by emergency medicine physicians on an ongoing basis that is typically required in critically ill patients. Our recommendation is therefore to make all feasible efforts to facilitate transfer of any ICU patient to the appropriate unit as soon as possible and preferably within 6 hours of arrival to the ED. If this cannot be attained, a critical care consult should be obtained to direct ongoing care.

References

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