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# Abstracts

## ☐ THE ED-SED STUDY: A MULTICENTER, PROSPECTIVE COHORT STUDY OF PRACTICE PATTERNS AND CLINICAL OUTCOMES ASSOCIATED WITH EMERGENCY DEPARTMENT SEDATION FOR MECHANICALLY VENTILATED PATIENTS.

Fuller B, Roberts B, Mohr N, et al. *Crit Care Med* 2019. doi:10.1097/CCM.0000000000003928. [Epub ahead of print]

Sedating patients on mechanical ventilation is a common role of Emergency Medicine Physicians. Recent studies have suggested that deep sedation in mechanically ventilated patients within the first 48 hours of intensive care unit (ICU) admission is associated with worse clinical outcomes. Emergency Department (ED) sedation practices in mechanically ventilated patients and their clinical outcomes are poorly studied and thus there are many variations in sedation management.

The goal of this multicenter prospective cohort study was to review ED sedation practices in multiple centers and to determine if deep sedation in the ED is associated with worse clinical outcomes. Patients met inclusion criteria if they were started on mechanical ventilation in the ED. Exclusion criteria included death or discontinuation of mechanical ventilation within 24 hours, transfer to another hospital, neurological injury, and chronic/home ventilation. Choice of sedation included opiates, benzodiazepines, propofol, ketamine, dexedetomidine, etomidate, haloperidol, quetiapine and neuromuscular blockers. Sedation depth was recorded using the Richmond Agitation-Sedation Scale, Riker Sedation-Agitation Scale or GCS with scores -3 to -5, 2 or 1, or less than or equal to 9 respectively, defined as deep sedation. The primary outcome was number of ventilator-free days. Secondary outcomes included the incidence of acute brain dysfunction (coma and delirium) within the first 48 hours of ICU admission, mortality, and days out of the ICU and hospital.

The study included 324 patients from 15 medical centers. The most commonly used sedation agents were fentanyl (64.5%), propofol (65.7%), and midazolam (23.8%), while 35 (10.8%) patients received no sedatives or analgesics. The rate of deep sedation in the ED was 52.8% and these patients received higher cumulative doses of propofol. Patients who were deeply sedated in the ED had a higher frequency of deep sedation in the ICU on day 1 compared to light sedation (53.8% vs. 20.3%; p<0.001) and day 2 (33.3% vs. 16.9%; p <0.001). In the deep sedation group, mortality was 21.1% and 17% in the light sedation group (between-group difference, 4.1%; odds ratio, 1.3; 0.74-2.28; p=0.35). Acute brain dysfunction had an occurrence rate of 68.4% in the deep sedation group and 55.6% in the light sedation group (between-group difference, 12.8%; odds ratio, 1.73; 1.10-2.73; p=0.02).

In this study, acute brain dysfunction was the only clinically significant adverse effect of deep sedation. There were no differences between the two groups in terms of mortality, ICU or hospital-free days. It is common for ICUs to have set protocols aimed at reducing medication requirements, ventilator duration, and lengths of stay, however there tends to be a lack of protocol in the ED. The authors concluded that sedation practices in the ED and their clinical outcomes warrant further investigation and quality improvement. The authors make a note that the ED environment is different from the ICU in terms of nurse-patient ratios, which plays a role in monitoring patients on light sedation for safety purposes, awareness, distress, and device removal. There may also be a relationship between deep sedation and severity of illness in critically ill patients.

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Comments: This study suggests that the depth of sedation achieved in mechanically ventilated patients in the ED plays an important role in determining the depth of sedation during the first 48 hours of admission in the ICU and potential clinical outcomes, such as acute brain dysfunction. However, severity of illness can certainly contribute to level of sedation or acute brain dysfunction. Equally concerning as the high level of deep sedation occurring in this study is the high incidence of patients receiving no analgesia or sedation at all. Currently there is a lack of consensus regarding appropriate sedation goals in the ED. As the authors state, this is an area in need of further investigation.

## ☐ HEMODYNAMIC DECOMPENSATION IN NORMOTENSIVE PATIENTS ADMITTED TO THE ICU WITH PULMONARY EMBOLISM.

Patel H, Shih JA, Gardner R, et al. *Journal of Critical Care* 2019;54:105-109

Pulmonary embolus (PE) is a common presenting complaint in the emergency department whose clinical severity varies greatly among patients. In cases of decompensation secondary to a PE, there are many management guidelines in place and most involve sending patients to the intensive care unit (ICU). However, many normotensive patients diagnosed with acute PE also are admitted to the ICU with no clear evidence of mortality benefit. The objective of this study was to identify rates