
The hemoglobin threshold for transfusion of red cells in patients with acute gastrointestinal bleeding is controversial. The authors compared the efficacy and safety of a restrictive transfusion strategy (transfusion when the hemoglobin level fell below 7 g per deciliter) with a liberal transfusion strategy in 921 patients with severe acute upper gastrointestinal bleeding. The probability of survival at 6 weeks was higher in the restrictive-strategy group than in the liberal-strategy group and the probability of further bleeding adverse events were lower.

This article may alter practices in the ICU. Previously, many intensivists, including myself, thought it was important to make sure that we “stayed ahead” of the bleeding. This study suggests this is a flawed strategy leading to increased bleeding, more complications and increased mortality. Furthermore, the study is consistent with other studies, particularly those where the bleeding results from esophageal varices. In the absence of conflicting data, use of a restrictive strategy is clinically indicated because it significantly improves patient outcomes in patients with acute upper gastrointestinal bleeding.


Intracranial-pressure monitoring is considered the standard of care for severe traumatic brain injury (TBI) and is used frequently, but the efficacy of treatment based on monitoring in improving patient outcomes has not been rigorously assessed. The authors conducted a multicenter, controlled trial of 324 patients with severe TBI. The patients were randomly assigned to one of two specific protocols: guidelines-based management in which a protocol for monitoring intraparenchymal intracranial pressure was used; or a protocol in which treatment was based on imaging and clinical examination. The primary outcome was a composite of survival time, impaired consciousness, and functional status at 3 months and 6 months and neuropsychological status at 6 months. There was no change in the primary outcome and the distribution of serious adverse events was similar in the two groups. For patients with severe TBI, care focused on maintaining monitored intracranial pressure was not shown in this article to be superior to care based on imaging and clinical examination.

Like the restrictive transfusion strategy in upper gastrointestinal bleeds discussed above, this is a good randomized study. Although the study does not show that
monitoring is harmful, it does demonstrate that it is ineffective in patients with TBI. In the absence of conflicting data, use of intracranial-pressure monitoring is not clinically indicated in patients with TBI because it does improve patient outcomes.


Ventilator-associated pneumonia (VAP) is an important cause of morbidity and mortality in critically ill patients. Clinical practice guidelines for the prevention, diagnosis, and treatment of ventilator-associated pneumonia may improve outcomes. The authors determined the effect of educational sessions augmented with reminders, and led by local opinion leaders, as strategies to implement VAP guidelines on guideline concordance and ventilator-associated pneumonia rates. A two-year prospective, multicenter, time-series study was conducted in eleven ICUs. At each site, 30 adult patients mechanically ventilated >48 hrs were enrolled during four data collection periods (baseline, 6, 15, and 24 months). The main outcome measure was aggregate concordance with the 14 ventilator-associated pneumonia guideline recommendations. Clinician exposure, aggregate concordance significantly improved and VAP rates decreased.

I have been a critic of these guidelines which in my view are weakly or non-evidence-based and have not been shown to improve patient outcomes. At first look, this data looks impressive. However, on closer inspection duration of ICU length of stay, duration of mechanical ventilation, and ICU mortality did not significantly change. Furthermore, VAP is a difficult diagnosis and recent studies have suggested that some ICU infections may not be accurately reported. Contrast this study to the two studies from the New England Journal discussed above where patient outcomes were the primary measure. In this study a surrogate marker, compliance with the guidelines, was the primary measure. As the first line of this article's abstract states, “VAP is an important cause of morbidity and mortality in critically ill patients” but the study does not show any reduction in these outcomes. Rather than supporting the use of guidelines, this article adds to the weight of evidence that current VAP guidelines are clinically ineffective.


Implementation of telemedicine programs in Intensive Care Units (tele-ICUs) has been touted to improve outcomes, but the costs of these programs are unknown. The authors performed a systematic literature review to summarize existing data
on the costs of tele-ICUs and collected detailed data on the costs of implementing a tele-ICU in a network of Veterans Health Administration (VHA) hospitals. Eight studies reporting costs showed a combined implementation and first year of operation costs for a tele-ICU of $50,000 to $100,000 per monitored ICU-bed. Changes in patient care costs after tele-ICU implementation ranged from a $3,000 reduction to a $5,600 increase in hospital cost per patient. VHA data suggested a cost for implementation and first year of operation of $70,000 to $87,000 per ICU-bed.

Tele-ICU technology and associated treatment protocols (e.g., ventilator protocols, sepsis management, and best practice protocols) can vary significantly between sites. Therefore, it is not surprising that previous studies have reached conflicting conclusions regarding whether tele-ICUs improve patient outcomes. Similarly, there is variability in the cost data reported in this article. The authors point out that one-half of the studies did not provide the costs for implementation, technology, or staffing; and other studies failed to include a breakdown of the technology costs. None of the studies considered how tele-ICU coverage hours and interaction protocols might impact staffing costs for the monitoring centers. Studies with vendor affiliation reported a cost savings of $2,600 to $3,000 per patient and suggested that tele-ICUs increased hospital profits by $1,000 to $4,000 per patient. Studies without vendor affiliation reported no variable cost savings and suggested increased hospital costs after implementation.

Personally, I am quite skeptical that tele-ICUs approach the outcomes achieved by a physician at the bedside. This article suggests that the implementation may be quite expensive and the long-term economic impact remains unclear. In the meantime, I agree with the authors that “clinicians and administrators should carefully weigh the clinical and economic aspects of tele-ICUs when considering investment in this technology.”

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