Jean Mantz, M.D., Ph.D., Editor

Perioperative Medicine

Outcomes using lower *vs* higher hemoglobin thresholds for red blood cell transfusion. JAMA 2013; 118:1208–1209

This article is the first of a novel section in JAMA called "JAMA clinical evidence synopsis." It provides a concise and clear-cut presentation of the updated robust evidence in a controversial and particularly important domain of medical practice. Interestingly, knowledge gaps to be filled by future trials are also emphasized. This issue is dedicated to transfusion thresholds in both medical and surgical settings and suggests that targeting low thresholds (7 –8 g/dl) *versus* higher thresholds results in a reduction in erythrocyte transfusion and no association with increased mortality, cardiac morbidity, length of stay, and functional recovery.

Intermediate acting nondepolarizing neuromuscular blocking agents and risk of postoperative respiratory complications: Prospective propensity score matched cohort study. BMJ 2012; 345:e6329

In this cohort study of 37,158 patients, surgical patients who received intermediate acting muscle relaxants during surgery were matched by propensity score with reference patients who did not receive such agents. The main outcome measure was arterial desaturation after extubation and reintubations requiring admission to the intensive care unit within 7 days of surgery. The use of intermediate muscle relaxants during surgery was found to increase the risk of postoperative desaturation to less than 90%, and of intensive care unit admission for unplanned reintubation (fig. 1). Qualitative monitoring of the use of muscle relaxants and neostigmine reversal of the action of these drugs did not prevent postoperative respiratory complications. Although this study has some limitations, particularly that of a single-center study, these data call for reevaluation of the strategies for preventing residual effects of muscle relaxants after anesthesia and surgery.

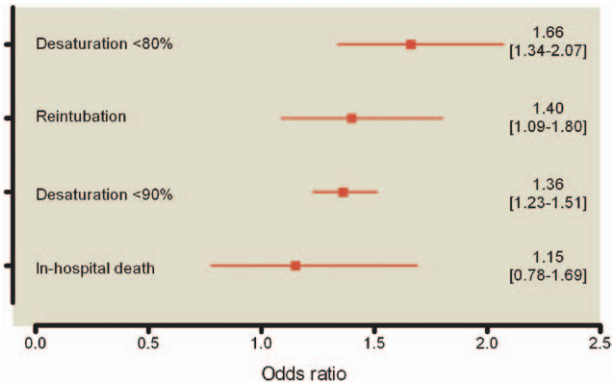

Fig. 1. Association between use of intermediate nondepolarizing neuromuscular blocking agents and outcomes in propensity matched cohort (N = 37,158). Values represent odds ratios and 95% CIs.

Overuse of preoperative cardiac stress testing in Medicare patients undergoing elective noncardiac surgery. Ann Surg 2013; 257:73–80

This retrospective observational analysis from a 5% sample of Medicare inpatient claims data (1996–2008) showed that 2,803 of 211,202 patients underwent preoperative stress testing without any indication. Female sex, presence of other comorbidities, high-risk procedure, and larger hospital size were identified as positive predictors of stress testing (fig. 2). These data indicate that overuse of preoperative stress testing before surgery and its consequences are a strong area for future investigations.

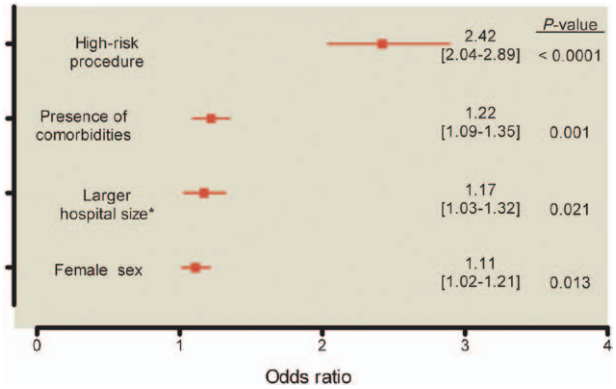

Fig. 2. Predictors of preoperative cardiac stress testing (N = 74,117). Comorbidities analyzed using Charlson Comorbidity Index. Large hospital size refers to hospitals with more than 500 beds. Values represent odds ratios and 95% CIs.

Critical Care Medicine

High frequency oscillation in early acute respiratory distress syndrome. N Engl J Med 2013; doi: 10.1056/NEJMoa1215554

High frequency oscillation for acute respiratory distress syndrome. N Engl J Med 2013; doi: 10.1056/NEJMoa215516

Extracorporeal membrane oxygenation for pandemic influenza (H1N1)-induced acute respiratory distress syndrome. Am J Respir Crit Care Med 2013; doi: 10.1164/rccm.201205-0815OC

Overall hospital mortality of patients with acute respiratory distress syndrome (ARDS) has decreased over the last 20 years, in particular because fewer patients have died of acute hypoxemia during the early phase of ARDS. The reasons for the improved survival of patients with ARDS are multifactorial but are certainly due in a large part to the use of low tidal volume ventilation, open lung approach, and less aggressive intravenous fluid therapy. However, there is a small subset of patients who still develop severe hypoxemia that is usually observed early after onset of ARDS and is not quickly corrected by low tidal volume ventilation with high-inspired oxygen fraction and positive end-expiratory pressure. This severe hypoxemia is associated with a diffuse lung damage that is seen with viral pneumonia (like H1N1 influenza), smoke inhalation, bilateral bacterial pneumonia, or severe pancreatitis. To maintain a minimally acceptable oxygen transport, several "rescue therapy" protocols have been developed that include, but are not limited to, high-frequency oscillation ventilation, prone positioning, administration of prostacyclin or nitric oxide by inhalation, or extracorporeal membrane oxygenation. Despite anecdotal reports of success, it has been difficult to demonstrate a survival benefit with these rescue treatments because of the small number of patients with ARDS who present with a severe and difficult-to-treat hypoxemia. However, two of these therapeutic approaches that are used as rescue therapy have recently been evaluated in multicenter randomized trials (high-frequency oscillation ventilation) or by using a propensity score-matched (1:1) cohort analysis (extracorporeal membrane oxygenation). Unfortunately, the results of these studies show that these alternative therapies do not increase survival of patients with ARDS. It should be pointed out that in these three cited studies, high-frequency oscillation ventilation and extracorporeal membrane oxygenation have not been used as rescue therapy, but as alternative treatment for ARDS. Furthermore, the results of these studies do not exclude that there could be individual success with high-frequency oscillation ventilation or extracorporeal membrane oxygenation. Thus, what should be the next therapeutic approach for patients with ARDS with severe hypoxemia that does not respond to conventional treatment? Three issues should be emphasized: (1) each hospital treating patients with severe ARDS should have a rescue therapy protocol for ARDS with severe hypoxemia; (2) the rescue therapy protocol should be patient-centered so that it could be easily adjusted to the particular clinical condition of the patient; (3) a combination of alternative therapeutic approaches could be considered that should be based on the best understanding of the pathophysiology of the lung injury of the patient to be treated.

Pain Medicine

The neuropathic component in persistent postsurgical pain: A systematic literature review. Pain 2013; 154:95–102

Persistent postsurgical pain is an area of major interest in perioperative medicine. Some investigators propose that nerve injury is a major factor contributing to persistent postsurgical pain. The authors performed a systematic review of 281 studies that investigated persistent postsurgical pain for 11 different surgeries. The prevalence of neuropathic pain in these conditions was determined using a neuropathic pain probability grading system. Probable or definite neuropathic pain was often reported after thoracic and breast surgeries and rates were lower after groin hernia repair. The prevalence of neuropathic pain varied among different types of surgery. In the future, a standardized approach to evaluate neuropathic pain after surgery may permit a better estimate of etiology for various persistent postsurgical pain conditions.

Education

Effect of exposure to good *vs* poor medical trainee performance on attending physician ratings of subsequent performance. JAMA 2012; 308:2226–32 (published in the yearly Medical Education Theme issue of JAMA)

Evaluation of graduate medical trainees is always potentially biased by factors related to the human nature of faculty evaluators. The behavior of faculty evaluators was studied for possible bias when 20 attendings initially viewed videos of "good trainee performance" and 21 attendings viewed videos of "poor trainee performance" of postgraduate year 1 trainees, followed by all 41 attendings viewing and rating videos of "borderline performance" interviews. The ratings of the borderline performance interviews were scored by the faculty who initially viewed good performance trainees and were compared with the ratings by the faculty who initially viewed the poor performance trainees. Faculty who viewed good performance first, rated borderline performance lower than faculty who viewed poor performance initially (mean rating score 2.7 *vs.* 3.4). Faculty "failed" trainees 55% of the time when good performance was the preceding exposure by the faculty compared with 24% when poor performance was the preceding exposure. Anesthesiology and critical care medicine faculty can be influenced by the same type of "contrast bias" when evaluating graduate trainee performance as demonstrated in this experimental setting for medicine faculty.