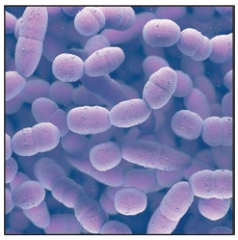
ANESTHESIOLOGY

Deborah J. Culley, M.D., Editor



Centers for Disease Control and Prevention guideline for the prevention of surgical site infection, 2017. JAMA Surg 2017 May 3 [Epub ahead of print].

Surgical site infections occur in approximately 2% of surgical procedures performed in the United States, and nearly half of these are thought to be preventable. These guidelines are intended to reduce the risk of surgical site infections and are the result of an evaluation of 170 studies. Many of their findings are not new and are thought to be a part of current routine practice. However, there were several strong recommendations with high-quality evidence that are not currently considered routine practice, including: (1) administration of intravenous prophylactic antibiotics before skin incision in all cesarean section procedures; (2) not administering additional antibiotic agents after the surgical incision in clean and clean-contaminated procedures, including prosthetic joint replacement surgery after the incision is closed in the operating room even in the setting of a residual drain; and (3) use of an alcohol-based skin preparation unless contraindicated. These guidelines also provide less strong recommendations where the evidence is not as high quality. *(Summary: Deborah J. Culley. Image: ©ThinkStock.)*

Take home message: The Centers for Disease Control and Prevention have published new guidelines for the prevention of surgical site infection.

Implicit racial bias in medical school admissions. Acad Med 2017; 92:365–9.

Implicit racial bias is subconscious, measurable, and real, and it may exist and influence medical school admission committees. This study from The Ohio State University College of Medicine measured implicit racial bias among the 140 members of the admissions committee using the implicit association test, a tool that can be used to identify biases outside of a person's conscious control. Both faculty and student members of the committee demonstrated some degree of implicit white preference. Faculty and males had the largest bias measures, whereas female members displayed the lowest white preference. Importantly, educating committee members about their bias may influence rates of admission of underrepresented minorities. The admissions cycle following the implicit association test exercise demonstrated a 26% increase in yield of underrepresented minorities. Although the change was not statistically significant, the following year's class was more diverse than that of the previous year even though the number of acceptance letters sent to underrepresented minorities was the same. *(Summary: Franklyn P. Cladis. Image: ©ThinkStock.)*

Take home message: It is important to recognize that implicit racial bias may have an impact on selection and recruitment of underserved minorities at all levels of undergraduate and graduate medical education.

Association of postoperative high-sensitivity troponin levels with myocardial injury and 30-day mortality among patients undergoing noncardiac surgery. JAMA 2017; 317:1642–51.

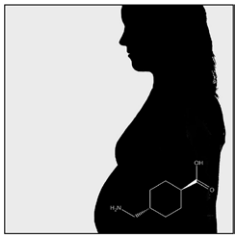
The relationship between 30-day mortality and perioperative high-sensitivity troponin T assay levels in patients having noncardiac surgery is not well defined. This study addresses this issue by prospectively following 21,842 patients from 23 centers in 13 countries that had blood drawn 6 to 12 h postoperatively and on postoperative days 1, 2, and 3 after surgery for the high-sensitivity troponin T assay. Centers were encouraged to obtain electrocardiograms in patients who experienced ischemic symptoms or had troponin T levels of at least 14 ng/l. Study personnel contacted patients or their families 30 days after their procedure to identify 30-day mortality. Two hundred and sixty-six patients died within 30 days of surgery (1.2%; 95% CI, 1.1 to 1.4%). Multivariate analysis demonstrated that elevated postoperative troponin levels dose-dependently increased 30-day mortality to between 3 and 29.6% ($P = 0.003$ to $P > 0.001$). These data demonstrate that elevated postoperative troponin levels as measured using a high-sensitivity troponin T assay is associated with increased 30-day mortality even when there are no clinical symptoms. *(Summary: Deborah J. Culley. Image: J. P. Rathmell.)*

Take home message: Patients with troponin T elevations in the postoperative period have a significantly increased 30-day mortality rate.

Dantrolene requires Mg^{2+} to arrest malignant hyperthermia. Proc Natl Acad Sci USA 2017; 114:4811–5.

Dantrolene has been used to reduce morbidity and mortality from malignant hyperthermia for many decades. In this study, the authors demonstrate that dantrolene is ineffective at preventing calcium release from the sarcoplasmic reticulum in absence of magnesium in both rodent and human malignant hyperthermia muscle models. This novel discovery, that blockade of calcium release from the sarcoplasmic reticulum by dantrolene is magnesium dependent, would need to be clinically validated. If so, then administration of magnesium might be important in the effectiveness of dantrolene in treating malignant hyperthermia. This was addressed in an accompanying editorial by Stephen C. Cannon (Mind the magnesium, in dantrolene suppression of malignant hyperthermia. Proc Natl Acad Sci USA 2017; 114:4576–8). *(Summary: Deborah J. Culley. Image: J. P. Rathmell.)*

Take home message: This preclinical study demonstrates that the combination of dantrolene and magnesium may be more effective than the administration of dantrolene alone.



Effect of early tranexamic acid administration on mortality, hysterectomy, and other morbidities in women with post-partum haemorrhage (WOMAN): An international, randomised, double-blind, placebo-controlled trial. Lancet 2017; 389:2105–16.

Postpartum hemorrhage is a leading cause of death in women of childbearing age. This study by the WOMAN Trial Collaborators randomly assigned women with a clinical diagnosis of postpartum hemorrhage from 193 hospitals in 21 countries to receive either intravenous tranexamic acid or placebo to determine whether tranexamic acid reduced the risk of hysterectomy or death from postpartum hemorrhage. A total of 10,036 patients were randomized to the tranexamic acid group and 9,985 to the placebo group. A total of 483 deaths occurred within 24 h of randomization, of which 346 (72%) were due to bleeding. Overall, the risk of death due to bleeding was less with tranexamic acid when compared with placebo (risk ratio = 0.78; 95% CI, 0.62 to 0.98; $P = 0.03$). In women where tranexamic acid was administered within 3 h of giving birth the risk of death due to bleeding was 1.2% versus 1.7% with placebo ($P < 0.008$), but when tranexamic acid was administered after 3 h there were no differences in outcomes between the groups ($P = 0.70$). (*Summary: Deborah J. Culley. Image: J. P. Rathmell.)*

Take home message: Tranexamic acid administered within 3 h of birth in the setting of postpartum hemorrhage is associated with a decreased risk of maternal death when compared with placebo.

Association of a Frailty Screening Initiative with postoperative survival at 30, 180, and 365 days. JAMA Surg 2017; 152:233–40.

Frailty has been identified as a strong predictor of mortality in older surgical patients. This study examined the effect of a Frailty Screening Initiative (FSI) on mortality and complications before and after implementation of the FSI. A total of 9,152 patients from a Veterans Affairs medical center who presented for major elective noncardiac surgery were involved in this study. As a part of the FSI, the medical records of patients with a Risk Analysis Index (frailty surrogate) greater than or equal to 21 were flagged for administrative review. Based on the review, a multidisciplinary care team was notified of the patient's frailty and associated risks so that perioperative management could be modified based on the team's input. Thirty-day mortality decreased from 2% to 1% ($P < 0.001$), 180-day mortality decreased from 24% to 8% ($P < 0.001$), and 365-day mortality decreased from 35% to 12% ($P < 0.001$). Limitations of the study include an inability to control for patients who were screened as frail but did not undergo a surgical procedure. *(Summary: Deborah J. Culley. Image: ©ThinkStock.)*

Take home message: A Frailty Screening Initiative can lead to a reduction in postoperative mortality in frail patients.

Effect of an immersive preoperative virtual reality experience on patient reported outcomes: A randomized controlled trial. Ann Surg 2017; 265:1068–73.

Patients' perception of their perioperative care is an important component of surgical outcomes. This study evaluated the effect of watching a 5-min virtual reality video about what to expect both preoperatively and postoperatively on the day of surgery and collected data about the patients' perception of their postoperative experience. The control group was provided the standard preoperative experience including the presence of a physician who explained to them what the preoperative experience would entail. A total of 127 patients were randomized into the study. Patients randomized to the virtual reality experience had higher Evaluation du Vecu de l'Anesthesie Generale (EVAN-G) scores (difference, 20.5; 95% CI, 11.9 to 21.0), higher Amsterdam Preoperative Anxiety and Information (APAIS) scores (adjusted difference, 31.1; 95% CI, 22.2 to 39.9), lower preoperative Visual Analog Scale (VAS) stress scores (difference, –41.7; 95% CI, –33.1 to –50.2), higher preoperative VAS preparedness scores (difference, 32.4; 95% CI, 24.9 to 39.8), and higher VAS satisfaction scores (difference, 33.2; 95% CI, 25.4 to 41.0). Although postoperative VAS satisfaction scores were higher in the virtual reality group (difference, 26.4; 95% CI, 20.1 to 32.6), there were no differences between the groups on average preoperative VAS pain score, postoperative VAS pain score, or 30-day postoperative VAS pain score. *(Summary: Deborah J. Culley. Image: ©ThinkStock.)*

Take home message: An immersive virtual reality experience may be superior in preparing patients for their perioperative experience and lead to less perioperative stress, but not less postoperative pain.

Prophylactic corticosteroids for prevention of postextubation stridor and reintubation in adults: A systematic review and meta-analysis. Chest 2017; 151:1002–10.

Corticosteroids have been used to prevent postextubation stridor and reintubation. This systematic review and meta-analysis evaluated whether intravenous administration of corticosteroids before extubation decreased the risk of reintubation and stridor and aimed to identify patient populations that benefited from preextubation corticosteroids. After reviewing 3,739 records, 11 studies were included in the analysis. Patients treated with prophylactic corticosteroids had a lower incidence of postextubation airway events (risk ratio = 0.43; 95% CI, 0.29 to 0.66) and reintubation (risk ratio = 0.42; 95% CI, 0.25 to 0.71) when compared with patients treated with placebo or no treatment. The authors identified that this association was primarily in participants at high risk for the development of postextubation airway complications as defined by the authors as a positive cuff-leak test, but there were no associations among trials with unselected patients. *(Summary: Deborah J. Culley. Image: M. Tillquist.)*

Take home message: Corticosteroids may lower the indicence of postextubation airway events and reintubation in patients with a positive cuff-leak test.