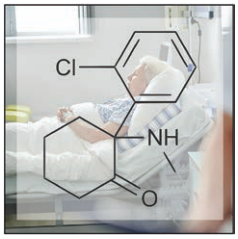
ANESTHESIOLOGY

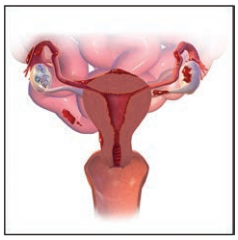
Deborah J. Culley, M.D., Editor



Intraoperative ketamine for prevention of postoperative delirium or pain after major surgery in older adults: An international, multicentre, double-blind, randomised clinical trial. Lancet 2017; 390:267–75.

Postoperative delirium is common in older surgical patients and is often associated with postoperative pain. Ketamine has been demonstrated to decrease postoperative pain leading to an interest in determining whether the administration of ketamine is associated with a decrease in the incidence of delirium and postoperative pain. The Prevention of Delirium and Complications Associated with Surgical Treatments study group investigated this hypothesis in an international study that randomized patients to placebo, 0.5 mg/kg, or 1.0 mg/kg of ketamine administered before incision yet after induction of general anesthesia. A total of 672 patients were randomly assigned between the three treatment groups. Administration of ketamine was not a predictor for the development of postoperative delirium ($P < 0.92$), Visual Analog Scale pain scores ($P = 0.88$), opioid consumption ($P = 0.47$), or the development of other adverse medical outcomes ($P > 0.40$), but patients treated with ketamine also were more likely to develop postoperative hallucinations ($P = 0.01$) and nightmares ($P = 0.03$). *(Summary: Peter Nagele and Deborah J. Culley. Image: ©ThinkStock.)*

Take home message: Ketamine administered after induction and before surgical incision may not decrease the incidence of postoperative delirium or pain in older surgical patients but may be associated with postoperative hallucinations and nightmares.



Treatment of endometriosis-associated pain with elagolix, an oral GnRH antagonist. N Engl J Med 2017; 377:28–40.

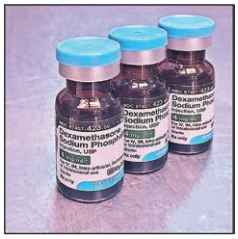
Endometriosis is a painful estrogen-dependent condition affecting approximately 10% of women of reproductive age. Current therapies include analgesics, hormonal therapy, and surgery, but these are often ineffective or associated with significant side effects and risks. This study reports the results of two large phase III clinical trials for endometriosis pain (total N = 1,689) using the GnRH antagonist elagolix. Women were randomized to receive elagolix at one of two doses or placebo with dysmenorrhea and nonmenstrual pain as the primary endpoints. With either dose of elagolix more women met the clinical response criteria at 3 months than did those who received placebo ($P < 0.001$). Dose-dependent hypoestrogenic adverse effects were common in women receiving active drug, including hot flashes, elevated serum low-density lipoprotein levels, and reductions in bone density. Thus, elagolix may offer some relief to women suffering from pain due to endometriosis, but potential side effects would need to be considered carefully in making this treatment decision. *(Summary: J. David Clark. Image: https://commons.wikimedia.org/w/index.php?curid=29600447.)*

Take home message: Elagolix has been shown to be effective in decreasing dysmenorrhea and nonmenstrual chronic pain in patients with endometriosis but is associated with hypoestrogenic adverse side effects.

Enhanced recovery after surgery program implementation in 2 surgical populations in an integrated health care delivery system. JAMA Surg 2017; 152:e171032.

Enhanced recovery after surgery (ERAS) programs focus on nutrition, mobility, fluid, and pain management to improve outcomes. This study investigated whether an ERAS program in patients having colorectal surgery or hip fracture repair leads to improved outcomes in twenty Kaiser Permanente Medical Centers by comparing the intervention group to retrospective controls. In total, 8,770 patients managed by the ERAS program were compared to 7,084 historical controls. The authors report that there were fewer postoperative complications in patients undergoing elective colorectal surgery (0.68; 95% CI, 0.46 to 0.99; $P = 0.04$) and emergency hip fracture repair (0.67; 95% CI, 0.45 to 0.99; $P = 0.05$) after initiation of the ERAS program. In addition, an ERAS program decreased hospital mortality in patients undergoing colorectal surgery (0.17; 95% CI, 0.03 to 0.86; $P = 0.03$) and increased likelihood of being discharged to home after emergency hip fracture repair (1.24; 95% CI, 1.06 to 1.44; $P = 0.007$). *(Summary: Peter Nagele and Deborah J. Culley. Image: ©ThinkStock.)*

Take home message: ERAS programs may lead to improved patient outcomes when implemented in a large medical system.



Dexamethasone versus standard treatment for postoperative nausea and vomiting in gastrointestinal surgery: Randomised controlled trial (DREAMS Trial). BMJ 2017 Apr 18; 357:j1455.

Dexamethasone is commonly used as prophylaxis for postoperative nausea and vomiting—common postoperative complications. This study by the DREAMS Trial Collaborators and West Midlands Research Collaborative randomized patients to receive a routine antiemetic of the practitioner's choice at the beginning of anesthesia (n = 676, control group) or a routine antiemetic of the practitioner's choice plus 8 mg of intravenous dexamethasone (n = 674, treatment group) and investigated the effect of dexamethasone on postoperative nausea and vomiting. Postoperative vomiting within the first 24 h occurred in 33% of the control group and 26% of the treatment group (relative risk, 0.77; 95% CI, 0.65 to 0.92; $P = 0.003$). In addition, there was a reduction in the administration of "requested" antiemetics for up to 72 h ($P = 0.001$) after the procedure without an increase in adverse outcomes. *(Summary: Peter Nagele and Deborah J. Culley. Image: J. P. Rathmell.)*

Take home message: Administration of dexamethasone on induction of anesthesia when combined with routine nausea and vomiting prophylaxis may lead to less nausea and vomiting in the postoperative period.

Exploring the relationships between USMLE performance and disciplinary action in practice: A validity study of score inferences from a licensure examination. Acad Med 2017 May 30 [Epub ahead of print].

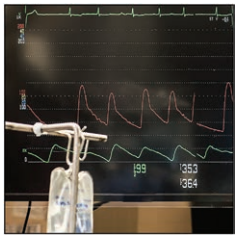
The United States Medical Licensing Exam is a four-component exam administered by the National Board of Medical Examiners that physicians must pass to practice independently. However, connection between performance on the exam and performance as a physician has not been established. This study compared data sets from the United States Medical Licensing Exam, including first-attempt scores on Step 1 and Step 2 Clinical Knowledge, with data from the Federation of State Medical Boards, which records disciplinary actions. A total of 164,725 physicians were evaluated in this study, which demonstrated that lower Step 2 Clinical Knowledge score, male sex, and years since medical school graduation were all independent predictors of disciplinary action. Specifically, each standard deviation increase in Step 2 Clinical Knowledge score reduced the likelihood of disciplinary action by 25% ($P < 0.001$). Step 1 score was not an independent predictor of disciplinary action. *(Summary: Franklyn Cladis. Image: ©ThinkStock.)*

Take home message: United States Medical Licensing Exam Step 2 Clinical Knowledge scores correlate with disciplinary actions on medical licenses.

Intraoperative infusion of dexmedetomidine for prevention of postoperative delirium and cognitive dysfunction in elderly patients undergoing major elective noncardiac surgery: A randomized clinical trial. JAMA Surg 2017 Jun 7 [Epub ahead of print].

Postoperative delirium is associated with adverse surgical outcomes. A number of studies have demonstrated that dexmedetomidine decreases the risk of delirium in the intensive care unit. This study investigated whether administration of dexmedetomidine to elective surgical patients over the age of 68 during surgery and for up to 2h after surgery in the recovery room reduced the risk of delirium. The authors randomized 404 patients to treatment with 0.5 ug · kg^{-1} · h^{-1} dexmedetomidine or placebo and found no difference in the incidence of postoperative delirium between the groups (12.2% *vs.* 11.4%, $P = 0.94$). Among the 228 patients that completed the cognitive evaluation at 3 and 6 months postoperatively, there were no differences in postoperative cognitive performance between those treated with placebo and those treated with dexmedetomidine. *(Summary: Deborah J. Culley. Image: ©ThinkStock. Illustration: A. Johnson, Vivo Visuals.)*

Take home message: Administration of dexmedetomidine during the perioperative period was not associated with differences in the rate of delirium or cognitive performance postoperatively in patients having elective noncardiac surgery.



Early, goal-directed therapy for septic shock—A patient-level meta-analysis. N Engl J Med 2017; 376:2223–34.

Studies have suggested that early goal-directed therapy might decrease mortality from septic shock whereas other studies have not validated this finding. The PRISM Investigators applied consistent inclusion criteria to reduce diversity within each of the three negative studies to explore whether differences in the patient populations were responsible for the negative results. The authors included 3,723 patients from more than 100 hospitals from multiple countries and found no difference in 90-day mortality between early goal-directed therapy (24.9%) and usual care (25.4%; odds ratio = 0.97; 95% CI, 0.82 to 1.14; $P = 0.68$). Early goal-directed therapy was not associated with any difference in 1-yr mortality but was associated with more intensive care treatment days ($P < 0.04$) and higher hospital cost. *(Summary: Deborah J. Culley. Image: J. P. Rathmell.)*

Take home message: Early goal-directed therapy for septic shock does not reduce mortality but may increase hospital costs.

Effect of American College of Surgeons trauma center designation on outcomes: Measurable benefit at the extremes of age and injury. J Am Coll Surg 2017 Jun 9 [Epub ahead of print].

Questions remain as to whether designation as an American College of Surgeons verified trauma center is associated with improved patient outcomes. This article describes a retrospective study utilizing the National Trauma Database from 2012 to evaluate whether American College of Surgeons designation is associated with lower morbidity and mortality rates in pediatric, adult, and geriatric patients when corrected for multiple variables. The authors included 392,997 patients in their study with 262,644 patients being managed in an American College of Surgeons designated trauma center and 130,353 managed in a center not verified by the American College of Surgeons. While there were no differences in complications among adult patients ($P = 0.12$), complications were higher among pediatric patients ($P = 0.003$) and elderly patients ($P < 0.001$) treated in a non-American College of Surgeons designated center. Interestingly, death from major trauma was higher in an American College of Surgeons designated center ($P = 0.013$) with the greatest difference occurring in emergency room. Patients treated in a medical center that was not designated by the American College of surgeons had higher complication rates regardless of age. *(Summary: Deborah J. Culley. Image: J. P. Rathmell, Brigham and Women's Hospital.)*

Take home message: Designation as an American College of Surgeons verified trauma center was associated with increased mortality from major trauma despite lower complication rates.