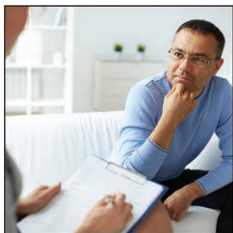


ANESTHESIOLOGY

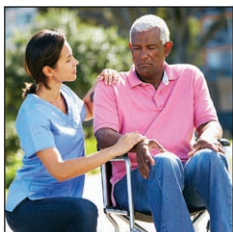


Deborah J. Culley, M.D., Editor


Two-year follow-up of a randomized clinical trial of mindfulness-based stress reduction vs cognitive behavioral therapy or usual care for chronic low back pain. JAMA 2017; 317:642–4.

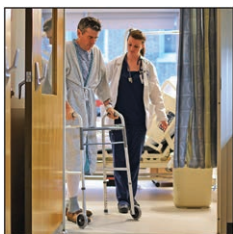
Chronic low back pain is one of the most vexing problems facing primary and specialty care providers in the United States and other countries. So-called “mind-body” therapies including cognitive behavioral therapy, mindfulness-based stress reduction, and others may be useful in this setting and may avoid the pitfalls of medications and surgery. However, long-term outcome data are scant. Cherkin *et al.* recently provided the 2-yr follow-up results of a three-arm randomized trial comparing usual care to cognitive behavioral therapy and mindfulness-based stress reduction ($N = 342$). Although all study groups continued to show improvement from baseline in terms of improvement in scores on the Rollin Disability Questionnaire, only the cognitive behavioral therapy group demonstrated improvement superior to usual care at the 2-yr time point. The overall effects of treatment were modest. The authors concluded that further research was needed to determine whether measures that improved adherence to the treatment protocols or providing booster treatments could improve both short- and long-term outcomes. (Summary: J. David Clark and Deborah J. Culley. Photo: ©ThinkStock.)

Take home message: Cognitive behavioral therapy may be beneficial in long-term pain outcomes.


Effect of a decision aid on access to total knee replacement for black patients with osteoarthritis of the knee: A randomized clinical trial. JAMA Surg 2017; 152:e164225.

Osteoarthritis of the knee disproportionately affects black patients, yet despite having higher rates of pain-related disability they are less likely to undergo knee joint arthroplasty. To address this disparity, an educational video was designed describing the risks and benefits of knee replacement surgery. Ibrahim *et al.* then tested the efficacy of this educational intervention in a group of 336 black patients with knee pain, associated disability, and radiographic evidence of osteoarthritis. Patients randomized to the educational intervention had a 14.9% rate of knee replacement within 12 months, whereas control patients had a 7.7% rate of surgery ($P = 0.04$). There was no difference in the rates of recommendation for surgery between the groups. The intervention also appeared to be relatively more effective for women and relatively young (ages 50 to 55) versus older patients. This study shows that patient-centered counseling and education may address the racial disparity in joint replacement surgery. (Summary: J. David Clark and Deborah J. Culley. Photo: ©ThinkStock.)

Take home message: Education on the efficacy of total knee replacement surgery may be used to reverse the disparity in knee replacement surgery in black patients with disabling osteoarthritis of the knee.


Effect of inpatient rehabilitation vs a monitored home-based program on mobility in patients with total knee arthroplasty: The HIHO randomized clinical trial. JAMA 2017; 317:1037–46.

Formal postoperative rehabilitation following total knee arthroplasty is often prescribed to enhance postoperative recovery. The study by Buhagiar *et al.* evaluated the efficacy of a 10-day inpatient rehabilitation program followed by an 8-week clinician monitored home-based program or the home-based program alone in Australian patients enrolled in a multicenter, two-group trial with an observational arm involving 246 patients randomized to the inpatient rehabilitation program plus the monitored home-based program ($n = 79$), the in-home program alone ($n = 80$), and an observational cohort that received neither ($n = 87$). The primary outcome was mobility at 26 weeks. The authors noted no differences in mobility as measured by the 6-min walk test between groups (mean difference, -1.01 ; 95% CI, -25.56 to 23.55) nor did they identify any differences in their secondary outcomes, including patient-reported pain, function, or quality of life. (Summary: Deborah J. Culley. Photo: J. P. Rathmell.)

Take home message: Inpatient rehabilitation following total knee arthroplasty may not lead to improved outcomes in patients undergoing elective surgery.


Effects of intraoperative fluid management on postoperative outcomes: A hospital registry study. Ann Surg 2017 Mar 10. [Epub ahead of print].

There is significant heterogeneity between practitioners in intraoperative fluid administration and some evidence that both high and low volume fluid administration may be associated with adverse outcomes. Shin *et al.* evaluated outcomes in more than 92,000 adult patients undergoing noncardiac surgical procedures based on intraoperative fluid administration. They found that both liberal (greater than 1,750 ml) and restrictive (less than 900 ml) fluid administration was associated with increased mortality ($P < 0.05$). In addition, they identified that fluid administration greater than 2,500 ml was associated with an increase in respiratory complications ($P = 0.003$), whereas fluid administration less than 900 ml was associated with an increased risk of acute kidney injury. Hospital length of stay was higher when more than 1,750 ml of fluid was administered ($P < 0.005$), whereas overall hospital costs were higher when more than 2,700 ml of intraoperative intravenous volume was administered. Interestingly, the volumes associated with the best outcomes were less than that suggested in traditional anesthesiology textbooks and were approximately 6 to $7 \text{ ml} \cdot \text{kg}^{-1} \cdot \text{h}^{-1}$. (Summary: Deborah J. Culley. Photo: J. P. Rathmell.)

Take home message: Both high and low intraoperative fluid administrations were associated with worse patient outcomes in this retrospective study. Prospective studies should be performed to determine whether prospective fluid volume administration guidelines should be changed in traditional anesthesiology textbooks.



Postoperative pulmonary complications, early mortality, and hospital stay following noncardiothoracic surgery: A multicenter study by the Perioperative Research Network Investigators. *JAMA Surg* 2017; 152:157–66.

There has been much interest about whether postoperative pulmonary complications could be predicted by potentially modifiable preoperative variables. Fernandez-Bustamante *et al.* investigated this in a prospective study involving 1,202 patients with American Society of Anesthesiologists physical status III undergoing noncardiac surgical procedures. Thirty-three percent of the patients had at least one postoperative pulmonary complication with 19.6% requiring prolonged oxygen therapy and 17.1% developing atelectasis. Interestingly, even mild postoperative pulmonary complications were associated with postoperative mortality, intensive care unit admission, and longer hospital and intensive care unit lengths of stay. Non-

modifiable risk factors for the development of postoperative pulmonary complications included emergency surgery, abdominal surgery, and advanced age. The list of modifiable risk factors for the development of postoperative pulmonary complications included the administration of colloid, poor preoperative oxygenation, higher blood loss, blood product administration, longer anesthesia duration, and the use of higher tidal volumes. (Summary: Deborah J. Culley. Photo: J. P. Rathmell.)

Take home message: The risk of pulmonary complications is high in the postoperative period among patients with American Society of Anesthesiologists physical status III. Among the potentially modifiable risk factors: administration of colloid, poor preoperative oxygenation, large blood loss and blood product administration, longer anesthesia, and the use of high tidal volumes. These factors were all associated with an increased risk of postoperative pulmonary complications.



Assessing the risks associated with MRI in patients with a pacemaker or defibrillator. *N Engl J Med* 2017; 376:755–64.

Traditionally a cardiovascular implantable electronic device has been considered a contraindication for magnetic resonance imaging (MRI). Russo *et al.* report on a prospectively established registry to determine the risk associated with nonthoracic MRI with a magnetic field strength of 1.5 tesla for 1,000 patients with a non-MRI-compatible cardiovascular implantable electronic device. All devices were interrogated before and after the MRI via a standardized protocol that excluded all patients who were pacemaker dependent and had an implantable cardioverter defibrillator. The authors report that there were no deaths, lead failures, loss of capture, or ventricular arrhythmias that occurred during the MRI in this patient population who had the device reprogrammed in accordance with the prospectively specified protocol.

Although there are several limitations to this study, including the limited magnet strength, it may be possible to consider nonthoracic MRI in patients with a cardiovascular implantable electronic device under some conditions. (Summary: Deborah J. Culley. Image: J. P. Rathmell.)

Take home message: Nonthoracic magnetic resonance imaging with a 1.5-tesla magnet may be considered in some patients with a cardiovascular implantable electronic device if they meet strict criteria.

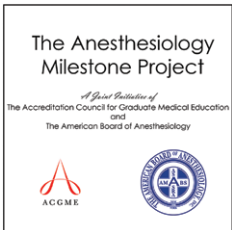


Opioid-prescribing patterns of emergency physicians and risk of long-term use. *N Engl J Med* 2017; 376:663–73.

Increasing use and abuse of opioids by patients is a growing national concern. The article by Barnett *et al.* evaluates whether care by low- or high-intensity opioid prescribing by emergency room physicians was associated with long-term opioid use or adverse outcomes. To do so the authors retrospectively evaluated outcomes from 215,678 and 161,951 patients receiving emergency room treatment from high-intensity and low-intensity prescribers, respectively. High-intensity prescribers had an overall rate of opioid prescribing of 24% compared to 7.2% in low-intensity prescribers. The authors found that long-term opioid use was higher among patients treated with high-intensity prescribers (1.5%) when compared to those treated by low-intensity prescribers (1.2%, $P < 0.001$). Similarly, patients that had any opioid-related hospital

encounters were more likely to have a fall or fracture ($P < 0.001$) or opioid poisoning ($P < 0.001$) within 12 months after opioid administration in the emergency room. (Summary: Deborah J. Culley. Photo: J. P. Rathmell.)

Take home message: Opioid administration in the emergency room is associated with a high risk of long-term opioid use and adverse patient outcomes.



Competent for unsupervised practice: Use of pediatric residency training milestones to assess readiness. *Acad Med* 2017; 92:385–93.

The Accreditation Council for Graduate Medical Education has implemented Milestone assessment to document learning by residents while educators ponder the meaning of achieving a Milestone rating. Li *et al.* conducted a multiinstitutional cohort study assessing the pediatric residency Milestones for more than 2,000 residents in 47 programs. Seventy-eight percent of the 550 graduating residents received a 3 or above rating in all 21 Milestones. Only 21% received a rating of 4 or above. The authors concluded that (1) residents learned and their Milestone assessments increased, and (2) 3 or above was a realistic expectation for graduating pediatric residents. In the original design of the Milestones, level 3 was proposed as midresidency Milestones and level 4 as graduating resident Milestones; thus, this study provides an

important recalibration of the pediatric Milestones. A similar investigation of anesthesiology resident Milestone ratings should provide programs and teachers with realistic expectations for graduating trainees from our specialty. (Summary: Alan Jay Schwartz and Deborah J. Culley. Image: ©Accreditation Council for Graduate Medical Education/American Board of Anesthesiology.)

Take home message: For pediatric residency programs evaluating residents using Accreditation Council for Graduate Medical Education Milestones, the achievement of Milestones at level 3 and above may indicate that the resident is ready for independent practice.