Educational Objectives

The goal of this program is to improve the management of obstetric anesthesia and the reporting of individual practice outcomes via the Anesthesia Quality Institute (AQI) of the American Society of Anesthesiologists. After hearing and assimilating this program, the clinician will be better able to:

1. Manage failed epidural anesthesia in the obstetric patient.
2. Review the clinical features of postdural puncture headache (PDPH).
3. Evaluate treatment options for PDPH.
4. Explain the goals of the AQI's National Anesthesia Clinical Outcomes Registry (NACOR) and the types of data that are being supplied by individual anesthesia practices.
5. Discuss information on anesthesia care and outcomes that is now available from NACOR.

Faculty Disclosure

In adherence to ACCME Standards for Commercial Support, Audio Digest requires all faculty and members of the planning committee to disclose relevant financial relationships within the past 12 months that might create any personal conflicts of interest. Any identified conflicts were resolved to ensure that this educational activity promotes quality in health care and not a proprietary business or commercial interest. For this program, members of the faculty and planning committee reported nothing to disclose.
93% to 95%; after second injection, success increases to 97%; if headache remains after 2 to 3 injections, another cause of headache likely; complications — back pain (avoid by not injecting under pressure); other complications include meningitis, arachnoiditis, seizures, and hemodynamic instability; prophylactic epidural blood patch — controversial; national survey showed that 8% to 10% of institutions use prophylactic epidural blood patch; typically involves administering 15 to 20 mL before removing catheter; studies suggest that probably does not prevent development of PDPH but can decrease duration and severity of symptoms; overall success rate at best 60%

Intrathecal catheters: following accidental puncture of dura, can thread epidural catheter into intrathecal space; this succeeds in plugging hole; studies suggest leaving for 24 hr; advantages of placing intrathecal catheter include rapid and predictable results; provides anesthesia for cesarean delivery, and less dose of anesthetic required with no concern for toxicity; decreased incidence of PDPH when left in for >24 hr; meta-analysis of intrathecal catheter by Heesen et al (2013) concluded that incidence of PDPH same, but duration and severity significantly reduced; risks of intrathecal catheters — nurses mistaking catheter for IV line and administering medications; infection; paraparesis; must be clearly marked; patient should be instructed not to allow anyone to use it for injection

Indications for further workup of postpartum headache: consider another cause when focal signs present, symptoms atypical, no documentation of wet tap, onset of headache >1 wk after insertion of epidural, or no postural component to pain; consider further workup in patients with comorbid conditions (eg, preeclampsia, coagulation disorders, hemophilia, vascular disease) or after 2 unsuccessful epidural blood patches; obtain computed tomography of head; consider consultation with neurology or neurosurgery; differential diagnosis includes CREST syndrome, stroke, and subarachnoid hemorrhage

Neuraxial anesthesia with low platelet count: 75,000/μL usually considered threshold; may have lower threshold in patient with idiopathic thrombocytopenic purpura or gestational thrombocytopenia; platelet count dynamic process (less concerning if increasing); recommended techniques — use midline approach; employ smallest needle possible; consider flexible soft-tip catheter; use more dilute anesthetic so patient better able to detect symptoms of epidural hematoma

Surgery during pregnancy: best to avoid when possible; if must operate during pregnancy, second trimester preferred; first trimester period of organogenesis, and third trimester accompanied by risk for preterm labor; when surgery required, use multidisciplinary approach involving surgeon, obstetrician, and anesthesiologist; monitoring of fetal heart rate (FHR) — decrease in heart rate may be caused by general anesthetic or immaturity of fetus; false-positive abnormalities common; need to work closely with obstetric consultant; if monitoring FHR, document before and after procedure; fetal resuscitation — consider that placenta has no capacity for auto-regulation; should increase blood pressure of mother (eg, IV fluids, vasoconstrictive agents, or stopping epidural infusion); apply supplemental oxygen; displace uterus to left

Suggested Reading


The Anesthesia Quality Institute

Richard P. Dutton, MD, MBA, Clinical Associate, Department of Anesthesia and Critical Care, University of Chicago Medicine and Biological Sciences, and Chief Quality Officer, American Society of Anesthesiologists, Chicago, IL

Creation of Anesthesia Quality Institute (AQI): publication of “To Err Is Human” (Institute of Medicine, 1999) stirred federal government’s interest in improving value of care; in addition, advancing technical capabilities have enabled gathering and storage of large amount of data; AQI launched as foundation of ASA to create quality in care and create national anesthesia registry; today AQI supports number of registries; Anesthesia Incident Reporting System (AIRS) — registry of unusual and interesting cases; protected from legal discovery; source of monthly case reports that appear in ASA newsletter; other support — ASA and AQI provide support for meeting part IV requirement of Maintenance of Certification in Anesthesiology to document quality improvement; ASA supports Closed Claims Project

National Anesthesia Clinical Outcomes Registry (NACOR): signs up anesthesia practices; primary data of practice submitted; builds electronic bridge from practice’s database (ie, monthly file produced by practice and then sent and registered in NACOR); goal to understand something about every anesthetic case in United States; currently 25% of cases being registered; n100% of university programs either have or installing electronic anesthesia record

Goal of NACOR: primary function to show practitioners their data over time in order to make anesthesia practices better; secondary goals include research and regulatory reporting; enables comparisons to peers; 22 million cases have been reported and 10 million added yearly; by far largest registry of its kind

Methodologies of other registries: eg, Adult Cardiac Surgery Database (Society of Thoracic Surgeons), Wake Up Safe, and National Surgical Quality Improvement Program; registries send nurse abstractor to pull information from medical records and load into registry; good data retrieved, but expensive (salary of $100,000 per yr with throughput of only 800 to 1000 cases per yr); methodology capable only of capturing sample, considering that average anesthesia practice 35,000 cases per yr; this, in turn, raises scientific questions of how to sample; another problem that approach not “nimble,” eg, when new technology or new operation invented (eg, robotic surgery), must retrain thousands of abstractors to get new data

Data in NACOR: all records contain basic administrative data important for quality improvement, eg, types of operations performed, duration of procedures, and patient outcomes; every anesthesia practice has this data in digital form (even practices with paper records must submit claims electronically, and billing record can be transferred to NACOR); ≥50% of all groups currently collect outcome data, eg, many use standard form to discharge patient from recovery room, which documents complications; smaller percentage submit outcome forms into electronic medical record; 20% to 25% of cases registered in NACOR have outcome information, and percentage rising; goal for every anesthetic procedure in United States to register type of anesthesia, administered medications and fluids, and how vital signs managed; other important data include length of stay, disposition after discharge, and postoperative laboratory values (eg, glucose, hemoglobin, and troponin)

Participating in AQI: anesthesia group signs standard legal agreement; engineers at NACOR build electronic bridge specific to practice; participants enter private dashboard; multiple
Establishing benchmarks: rates of admission to ICU do not vary across practices, whereas PONV demonstrates large variability between groups (variability considered opposite of quality), suggesting opportunity for improvement; for groups reporting since 2010, rate of complications decreasing; may be that population of sick patients being diluted or that groups measuring quality are examining results and improving

Future directions: patient satisfaction — some private practices track patient satisfaction ≤1 wk after anesthesia; results recorded electronically; when results returned to practitioners, rates of satisfaction improve; big competitive advantage when group able to show data to hospitals; Maternal Quality Improvement Project — collaborative effort between ASA and American Congress of Obstetricians and Gynecologists; measures comprehensive outcomes in obstetrical anesthesia; Anesthesiology Leadership Registry established, with goal to create opportunities for mentoring

Suggested Reading

Acknowledgments
Dr. Vallejo spoke at the 65th Annual Postgraduate Symposium on Anesthesiology, presented by the University of Kansas Medical Center, Department of Anesthesiology, and University of Kansas Medical Center Continuing Education, and presented April 10-12, 2015, in Kansas City, MO. For information on upcoming CME meetings from the University of Kansas Medical Center, visit kumcce.ku.edu. Dr. Dutton spoke at the 28th Annual Conference: Challenges for Clinicians, presented by the Department of Anesthesia and Critical Care, University of Chicago Medicine and Biological Sciences, and held December 5-7, 2014, in Chicago, IL. For information on upcoming CME meetings from The Department of Anesthesia and Critical Care, University of Chicago Medicine and Biological Sciences, visit cme.uchicago.edu or visit our website, Audiodigest.org, and click on “Upcoming Meetings.” The Audio Digest Foundation thanks the speakers and the sponsors for their cooperation in the production of this program.

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Estimated time to complete the educational process:

- Review Educational Objectives on page 1 5 minutes
- Take pretest 10 minutes
- Listen to audio program 60 minutes
- Review written summary and suggested readings 35 minutes
- Take posttest 10 minutes
1. When employing epidural anesthesia in the obstetric patient, which of the following approaches is recommended for the treatment of patchy analgesia?
   - (A) Rebolus epidural
   - (B) Increase concentration of infusion
   - (C) Turn patient
   - (D) Add administration of intravenous analgesia

2. There is a ______ incidence of postdural puncture headache (PDPH) after occurrence of a wet tap when a Tuohy needle is used.
   - (A) >10%
   - (B) >20%
   - (C) >30%
   - (D) >50%

3. Which of the following is a pathognomonic finding for PDPH?
   - (A) Location in occipital area
   - (B) Severe pain in neck
   - (C) Worse pain on sitting up
   - (D) Visual disturbances

4. An epidural blood patch is most effective for treating PDPH when performed:
   - (A) Within 12 hr of puncture
   - (B) Within 24 hr of puncture
   - (C) 24 hr or more after puncture

5. After 2 epidural blood patches have been performed to treat PDPH, the success rate is:
   - (A) 61%
   - (B) 74%
   - (C) 89%
   - (D) 97%

6. Which of the following is the primary goal of the National Anesthesia Clinical Outcome Registry (NACOR)?
   - (A) Quality improvement of anesthesia practices
   - (B) Furthering research
   - (C) Fulfilling regulatory requirements

7. Data in which of the following registries are LEAST susceptible to sampling errors?
   - (A) National Surgical Quality Improvement Program
   - (B) Wake Up Safe
   - (C) NACOR
   - (D) Society of Thoracic Surgeons’ Adult Cardiac Surgery Database

8. Volume of anesthesia cases has risen in the last 4 yr in which of the following?
   - (A) University hospitals
   - (B) Large community hospitals
   - (C) Small hospitals

9. According to data from the Anesthesia Quality Institute (AQI), the outpatient setting accounts for ______ of anesthesia cases.
   - (A) 45%
   - (B) 60%
   - (C) 70%
   - (D) 80%

10. Based on data from the AQI, the perioperative incidence of which of the following has decreased in the last 4 yr?
    - (A) Unexpected admissions to intensive care unit
    - (B) Eye injuries
    - (C) Dental injuries
    - (D) Postdural puncture headache

Answers to Audio Digest Anesthesiology Volume 57, Issue 41: 1-D, 2-C, 3-C, 4-A, 5-B, 6-D, 7-C, 8-C, 9-D, 10-D

NOTE: On Audio Digest Anesthesiology, Volume 57, Issue 35, option B for test question 5 should read: “1,2.”