THE AMERICAN BOARD OF ANESTHESIOLOGY, INC.

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MOCA PART 4: PRACTICE PERFORMANCE ASSESSMENT AND IMPROVEMENT HOW TO COMPLETE A CASE EVALUATION

All diplomates enrolled in MOCA are required to satisfactorily complete the MOCA Part IV: Practice Performance Assessment and Improvement program. One component of the program is a four-step case evaluation as described below:

1) **Collect:** The diplomate collects a meaningful sample of data, over an extended period of time, from one of the following:
   - Clinical outcomes data on patients from a specific period of time or group of patients
   - Feedback from patients that relates to clinical care given

2) **Compare:** The diplomate compares the outcomes with guidelines approved by professional societies such as the ASA; ideally those guidelines should be evidenced based. Alternatively, the diplomate may compare outcomes with results from meta-analyses or Cochrane reviews. If such guidelines are not available, then the diplomate may compare outcomes with consensus opinion or peer (inside and/or outside group) data to determine areas for improvement.

3) **Implement:** The diplomate designs and implements a plan to improve outcomes in one of four selected areas:
   - Clinical reminders
   - Personal education
   - Change in system or process
   - Clinical pathway

The development of a practice improvement plan may be an individual or a group effort and implementation may be done by a group or by the diplomate. If the group approach is used, it must be possible to extract the individual diplomate's data from the group data. Currently, the AMA PRA Category 1 Practice Improvement credit meets these criteria provided all stages are completed. Information is available on the AMA website at http://www.amaassn.org/ama1/pub/upload/mm/455/pra2006.pdf#page=15.

4) **Evaluate:** The diplomate collects new data on patient outcomes, compares the latest outcomes to the chosen guidelines or standards, and determines the amount of change since the original assessment. The goal is for the diplomate to improve or maintain a high standard of practice.

Submitting a Case Evaluation to the ABA:

At the end of the four-step process, diplomates prepare a summary of the four steps (see attached examples). When the document is complete, please submit it via fax to (866) 999-7503. All Case Evaluations are subject to audit and review.

NOTE: Diplomates are advised not to make reference to patient identifiers or the name/location of the institution and/or practice in the case summaries.

If you have any questions, please contact the ABA Communications Center at (866) 999-7501.

Sample # 1
Nausea and Vomiting

The chair of an anesthesiology department regularly reviews the comments solicited by the hospital about patient satisfaction. She notes what she believes to be an unusually high number of complaints about nausea and vomiting (N/V) after ambulatory surgery. She asks that the Q/A committee of her department look into the issue.

The Q/A committee meets and discusses how this issue should be approached. They decide to **collect** data about the incidence of N/V, including data on the surgical procedure, length of procedure, anesthesiologist, anesthetic agents given, airway management, analgesic use in the PACU, and any complications.

After collecting 3 months of retrospective data they did an analysis. Based on their initial analysis, they identified factors that were associated with a higher than average incidence of N/V. In addition, they reviewed the current literature to determine both incidences of N/V in large scale studies, as well as proposed best practices for prevention and management of N/V, as a basis to **compare** their results. The committee then reported their results recommendations to the whole department. They compared national rates of N/V with theirs, pointing out that, as a whole, members of the department had a higher incidence of vomiting for patients having surgery considered high risk for vomiting, but a normal incidence for patients having surgery considered low risk. However, three members of the department were identified as having a much higher incidence of N/V in all patients. Their cases were separately analyzed. It was noted that they had a higher incidence of nausea when mask ventilation was used for the airway management of the case.

Based on this analysis, the department agreed on what they decided to **implement** what they felt represented a best practice of prevention of N/V. Among the several elements of the best practice, prophylactic antiemetics were to be ordered for all high risk cases, including patients with a past history of N/V. In addition, it was suggested that mask ventilation appeared to be associated with a higher incidence of vomiting. Lastly, a clinical protocol for treatment of N/V was developed and communicated to anesthesia, nursing and surgical staff.

After 6 months of the new protocol, data was collected for a month to **evaluate** the incidence of N/V against previous data and national figures. The incidence of N/V declined to below previous levels and below national averages for all practitioners except one. In evaluating the practice of the remaining outlier, it was noted that he continued to use mask ventilation to a much greater degree than his colleagues. When this was pointed out to him, he consciously changed his practice. The committee again collected data 6 months later and confirmed that the improvement in the incidence of N/V has persisted for all staff.

Sample # 2
Surgical Site Infections

The Chief Medical Officer and the Chief Quality Officer for the hospital note that the hospital has a high rate of surgical site infections, when compared to other hospitals in the region. They ask the Chair of the Department of Anesthesiology to determine whether the anesthetic care is a contributing factor to the high rate of surgical site infections.

The Chair of Anesthesiology asks the Anesthesiology Department's Quality Improvement (QI) Committee to address this question. The QI Committee meets and discusses how this issue should be approached. They decide to **collect** data about three quality measures: 1) timing and documentation of preoperative prophylactic antibiotic administration, 2) patient body temperature on arrival in the PACU, and 3) perioperative glucose control in diabetic patients. The QI committee also decides to **collect** data for the Anesthesiology Department in aggregate, and also for individual anesthesiologists.

After collecting retrospective data for cases performed during ht e last three months, the QI Committee performs an analysis. First, they determine that a large number of anesthetic records do not document the timing of preoperative prophylactic antibiotic administration. They also determine that some anesthetic records indicate that prophylactic antibiotics were not administered before incision. Second, they determine the incidence of hypothermia on arrival in the PACU. When they evaluate the incidence of hypothermia for each anesthesiologist, they find that two anesthesiologists had a substantially higher incidence of hypothermia than the other members of the Department. Third, they observe that a substantial number of insulin dependent diabetics did not have a preanesthetic blood glucose determination, and they identify three anesthesiologists who were less likely to determine the preanesthetic blood glucose measurement than other members of the Department. They also note that some patients with a high preoperative blood glucose measurement did not receive insulin.

The QI Committee then **compares** their results with published guidelines regarding the timing of preoperative prophylactic antibiotic administration, including the recommendation that infusion of the first dose should begin within 60 minutes of incision. Second, the Committee reviews evidence-based guidelines for prevention of hypothermia during surgery. Third, they review recent studies of the efficacy of tight perioperative glucose control in diabetic patients undergoing surgery.
The QI Committee then reports their results and **implements** their recommendations to the entire Department. They emphasize the importance of timely preoperative administration of prophylactic antibiotics and the clear documentation of same on the anesthetic record. Second, they review the various methods of preventing hypothermia, and they establish guidelines for the use of prophylactic measures such as forced-air warming blankets. Third, they establish standing orders for preoperative blood glucose administration in diabetic patients. The QI Committee is reluctant to establish specific target guidelines for perioperative blood glucose control, although they do recommend the use of a continuous insulin infusion to maintain blood glucose levels between 150 and 200 mg/dL in diabetic patients undergoing open-heart surgery. The Department agrees to implement these recommendations and to reevaluate these outcome measures after six months.

Six months later, the QI Committee collects data to **evaluate** the results of their earlier recommendations.
The Committee notes a substantial improvement in both the timing and documentation of preoperative prophylactic antibiotic administration. However, they note that one anesthesiologist has continued to lag behind the other members of the Department in this regard, and they counsel her. Second, the QI Committee notes a substantial reduction in the incidence of hypothermia on arrival in the PACU, although they note that one anesthesiologist had a higher incidence than his colleagues. Further analysis reveals that this anesthesiologist frequently provides anesthesia for patients undergoing prolonged abdominal surgery, who might be at increased risk for hypothermia. Nonetheless, the Committee reviews prophylactic measures with this anesthesiologist.

Third, the Committee documents substantial compliance with the standing orders to obtain a preoperative blood glucose measurement in all diabetic patients, and they note that a higher percentage of patients with a preoperative blood glucose greater than 200 mg/dL received insulin than occurred during the previous assessment period.

The Chair of the Anesthesiology Department presents these results to the hospital's Chief Medical Officer and Chief Quality Officer. Concurrently, these administrators have observed a reduction in the hospital's overall rate of surgical site infections, and the reduction is most pronounced in patients undergoing sternotomy for open-heart surgery.

The Committee collects data again six months later and confirms that the anesthesiologist who previously had poor compliance with the prophylactic antibiotic guidelines has improved his compliance to a level similar to that of other members of the Department.

Sample # 3
Hypothermia

I noticed that many of my patients were shivering when I took them to the post-anesthesia care unit. When a patient with cardiovascular disease who had undergone a lumbar laminectomy developed a postoperative myocardial infarction, I decided to prospectively collect temperature data on every patient that I took care of for the next 3 months.

During those 2 months, I provided anesthesia for 75 patients undergoing all types of neurosurgical procedures. Fifteen of these patients received only sedation for their procedures (deep brain stimulation for Parkinson's' Disease, awake craniotomy and vagal nerve stimulator generator change). The remaining 50 received general anesthesia for intracranial vascular procedures, intracranial tumor resection and spinal instrumentation.

The patients who had received general anesthesia ranged in age from 18 to 88, with a mean of 62 years of age. Their surgical procedures lasted from 45 minutes to 8 ½ hours. On admission to the post-anesthesia care unit, their average temperature was 35.4° C (range 34.8 – 35.9). With the exception of 6 patients, all were extubated while still in the operating room.

After defining the degree of hypothermia that my patients had after their anesthetics, I did a PubMed literature search and identified articles relevant to prevention of hypothermia (see the attached list). In addition to reading these articles, I attended The PGA scientific panel "Temperature monitoring to improve perioperative outcomes" as well as other lectures at the ASA related to the importance of avoiding perioperative hypothermia.

Since then, I have changed my practice in the following ways:

- I keep the operating rooms where I work warm until after the patient has been prepped and draped.
- I routinely use forced air warming units on all patients receiving a general anesthetic.
- When I anticipate having to rapidly administer a large volume of intravenous fluid, I use a fluid warmer.
- In addition, I have begun to speak with the perioperative administrative and nursing periooperative staff about increasing the temperature in the preoperative holding area.

In the 6 weeks after revising my patient management, I provided 51 general anesthetics. The average patient age was 56 years (range 15 – 84 years), surgical duration ranged from 90 minutes to 10 hours and the types of surgical procedures were unchanged from my initial data review. On average, the patients' temperature on admission to the post-anesthesia care unit was 36° C (range 35.6 to 37.7). No patient had suffered a perioperative myocardial infarction and all but 1 were extubated immediately after surgery.

Reading List

1. Smith CE, Yamat RA. Avoiding hypothermia in the trauma patient. Curr Opni Anesthesiol 2000;13:167-74
2. Eddy VA, Morris JA Jr, Cullinane DC. Hypothermia, coagulopathy, and acidosis. Surg Clin North Am. 2000;80:845-54
3. Ferrara A, MacArthur JD, Wright HK, Modlin IM, McMillen MA. Hypothermia and acidosis worsen coagulopathy in the patient requiring massive transfusion. Am J Surg 1990;160:515-8
4. Kurz A, Sessler DI, Lenhardt R. Perioperative normothermia to reduce the incidence of surgical-wound infection and shorten hospitalization. Study of wound infection and temperature group. N Engl J Med 1996;334:1209-15
5. Lenhardt R, Marker E, Goll V, Tschernich H Kurz A, Sessler DI, Narzi E, Lackner F. Mild intraoperative hypothermia prolongs postanesthetic recovery. Anesthesiology 1997;87:1318-23
6. Beilin B, Shavit Y, Razumovsky J, Wolloch Y, Zeidel A, Bessler H. Effects of mild hypothermis on cellular immune responses. Anesthesiology 1998;89:1133-40
7. Guest JD, Vanni S, Silbert L. Mild hypothermia, blood loss and complications in elective spinal surgery. Spine J 2004;4:130-7
8. Frank SM, Fleisher LA, Breslow MJ, Higgins MS, Olson KF, Kelly S, Beattie C. Perioperative maintenance of normothermia reduces the incidence of morbid cardiac events. A randomized clinical trial. JAMA 997;277:1127-34
9. Kurz A, Sessler DI, Narzt E, Bekar A, Lenhardt R, Huemer G. Postoperative hemodynamic and thermoregulatory consequences of intraoperative core hypothermia. J Clin Anesth 1995;7:359-66

Sample # 4
Perioperative Beta Adrenergic Blockade

Many of my patients who were either taking beta blockers preoperatively or who had known coronary artery disease were arriving in our preoperative area without receiving beta blockers on the morning of their surgeries. In fact, I noticed that they were often not receiving them postoperatively. I have read several articles about the benefits of the use of beta blockers throughout the perioperative period for these patients. Thus, I decided to prospectively collect data on every patient that I took care of for the next month to see which patients should have been getting beta blockers as described by guidelines from the ASA and the American College of Cardiologists (ACC).

During that month, I provided anesthesia for 48 adult patients undergoing all types of general, orthopedic, and urologic procedures. Eight of these patients were taking beta blockers to treat their hypertension, and only four of these patients were advised by their surgeons to take their beta blockers on the morning of surgery. Another six patients had long-standing coronary artery disease, and none of these patients were given beta blockers preoperatively. All eight of the patients who were taking beta blockers preoperatively received them either in the hospital or at home within two days of their operations. However, none of the six patients with coronary artery disease received them within two days of their surgery.

Obviously, these findings did not seem appropriate for my patients. I discussed this issue with my anesthesia colleagues, and they thought my findings probably also applied to their practices. Therefore, we worked with our hospital administration to arrange a meeting with the leaders of our surgical groups to discuss how we might do better at meeting the ASA/ACC guidelines. There was considerable controversy at first, but we eventually arrived at a consensus. The hospital administration was sufficiently interested to provide a nurse to help us get the new way we care for patients up and running and to monitor our use of it for the first month.

We believe that we have definitely improved. We had a combined 168 adult patients in the month. Of our 25 patients who regularly took beta blockers, 22 of them were advised to take them on the morning of surgery – and all of them complied. We had another 13 patients with known coronary artery disease who were not taking beta blockers. Our new preoperative screening process identified these patients, and all were started on metoprolol on the day before surgery. All of these combined 38 patents were given beta blockers as soon after their surgeries as possible, using a nurse administered program to get them started.

Appendix
Practice Guideline: American College of Cardiology (Eagle KM et al):

http://www.acc.org/qualityandscience/clinical/guidelines/perio/clean/VII_perioperative.htm#VII_B

Recommendations for Perioperative Medical Therapy

Class I
1. Beta blockers required in the recent past to control symptoms of angina or patients with symptomatic arrhythmias or hypertension.
2. Beta blockers: patients at high cardiac risk owing to the finding of ischemia on preoperative testing who are undergoing vascular surgery.

Class IIa
Beta blockers: preoperative assessment identifies untreated hypertension, known coronary disease, or major risk factors for coronary disease.

Class IIb
Alpha 2-agonists: perioperative control of hypertension, or known CAD or major risk factors for CAD.

Class III
1. Beta blockers: contraindication to beta blockade.
2. Alpha 2-agonists: contraindication to alpha2-agonists.