ANESTHESIA PEARLS

I. What are the main concerns of anesthesiologists in the perioperative period?

The anesthesiologist fulfills several critical roles in the perioperative period apart from the actual administration of the anesthetic. The anesthesiologist functions also as a “primary care” physician for the patient’s medical conditions in the operating room. Anesthesiologists have a wide range of core medical knowledge as well as broad experience in managing co-existing disease in the operating room. They also have specialty knowledge in cardiovascular and respiratory physiology, and critical event management. Many issues of interest to the anesthesiologist in the perioperative period overlap with concerns of the medicine consultant.

A primary focus of anesthesia practice is risk management and patient safety. In the preoperative period, some examples of issues that anesthesiologists focus on include:

- Relative risk of the surgery in question
- Current medical comorbidities and whether they have been optimized
- History or physical exam indications of any undiagnosed medical conditions that could affect anesthesia and surgery
- What anesthetic techniques are options for surgery, and which best address the medical co-morbidities of the patient while providing good surgical conditions
- In what ways physical aspects of the surgery (positioning, site of incision, duration, need for muscle relaxation) affect anesthetic choices and monitoring patients, whereas most vascular surgery is high risk, even in medically stable patients)
- The monitoring (including hemodynamic and neuromuscular monitoring) that is appropriate for the surgery and will impact risk in a positive way
- Postoperative management of pain, respiratory changes, nausea and vomiting in the postoperative period
- Discharge issues such as how soon the patients can be discharged, where the patient will be discharged to, and in whose company

II. Some “pearls” to think about:

Evidence-based guidelines on anesthesia and surgery are extremely helpful in most cases, but are not always completely applicable, because they fail to account for local differences in surgical practice, as well as important differences among individual surgeons. Issues that can affect whether further work up of a medical condition, or other management is needed in the perioperative period, and are often overlooked include:

- **Positioning during surgery**: Some surgeries require sitting position (shoulder, breast, and some neurosurgery). Further cardiac or neurovascular workup may be indicated if the patient will undergo unusual positioning with adverse hemodynamic consequences.
- **Blood loss**: While surgeries can be categorized into major, minor and minimal blood loss, this is highly dependent on the surgeon, whether the surgery is a revision of a previous one, and the surgical technique. For example, blood loss during spine surgery can range from minor (1-2 unit loss not requiring transfusion) to major/disastrous (up to or exceeding one blood volume). Consultation with an anesthesiologist may be helpful in defining these risks for the patient, based both on the surgery and the surgeon performing it.
- **Duration of surgery**: Not all surgeons work alike. One surgeon may routinely finish a lumbar laminectomy in 20 minutes, for example, while another takes 3 hours. Duration of surgery affects anesthetic choices, risks, and perioperative planning. Discussion with the anesthesiologist may facilitate your plans, particularly in high-risk patients.

- **Device management**: All implantable electronic devices should be either turned off or reprogrammed for the operating room during elective surgery. Please be aware that this includes neurostimulator devices. Devastating central nervous system injuries have been reported in Parkinsons patients with deep brain stimulators, for example, as a result of deep brain electrical injury. Consultation with the anesthesiologist can help determine if an exception to this general rule can be made.
- **Open vs. Laparoscopic Surgery**. Although laparoscopic surgery is considered less invasive, physiologic changes during laparoscopy can have serious hemodynamic consequences. Patients may be positioned in extreme upright or extreme Trendelenberg position. Insufflation of the abdomen affects right heart filling. Absorption of CO_2 leads to obligatory hypercapnia. Ventilation is impeded due to high abdominal pressures. For patients who cannot tolerate these changes, other surgical approaches might be appropriate, even if more "invasive."
- **Regional anesthesia is no safer than general anesthesia** for most procedures, with some very limited exceptions. The decision for regional vs. general anesthesia is made based primarily on patient and surgeon preference, and postoperative pain management issues. Please consult the anesthesiologist if you have questions.

III. What do anesthesiologists find helpful in a medicine consult note:

- A list of medical comorbidities and assessment of the current status of each
- Plans for any further workup or intervention for co-morbidities
- Plans regarding anticoagulation, including timing and meds to be discontinued, and plans for bridging therapy, if any
- Requests for anything that might be helpful to your postoperative management. For example: you might want central line access, but such access is not needed for the anesthetic per se. Anesthesia is more than happy to place these lines or others for you while the patient is anesthetized. Please do indicate that you are requesting the line for postoperative issues, however.

IV. Statements/advice to avoid in a medicine consult note:

- Please DO NOT advise anesthesiologists to "avoid hypoxemia and hypotension," or "watch the patient's hemodynamics" during surgery, or similar statements. Anesthesiologists specialize in understanding the hemodynamic/respiratory/metabolic changes brought about by the surgery and anesthetic, and how to treat them.
- Please DO NOT instruct the anesthesiologist about what monitors to use, or make statements that a patient "must have" or "needs" such a monitor. Anesthesiologists specialize in understanding when the information from a particular monitor (e.g. PA catheter), is helpful or not. Statements advising use of these devices create medico-legal problems when the anesthesiologist's expert opinion differs from yours. Please make any advisory statements that you feel compelled to make flexible enough to accommodate dissent. For example : "PA catheter might be useful," or "would consider PA catheter."
- Please DO NOT demand a specialist anesthesiologist or make statements that the patient requires them (see below for guidelines). It also creates medico-legal issues if there is disagreement with the specialist. Statements such as "will consult cardiac anesthesia," or "consider cardiac anesthesia" are much more acceptable.
- Under NO circumstances should you ever "prescribe" an anesthetic. The anesthesiologist is the specialist best qualified to determine the appropriate and safest anesthetic techniques.

IV. When should you think about consulting a subspecialty anesthesiologist?

- Pain specialist: Patient has medical co-morbidities or complex pain issues that will require special techniques. Risk factors for postoperative pain management issues include: sleep apnea, chronic sedative or opioid use, history of poor postoperative pain control, history of substance abuse (including alcohol), complex surgery, or history of opioid allergies.
- Cardiac Anesthesiologist:* Procedure will involve cardiopulmonary bypass, transesophageal monitoring may be needed, patient has complex congenital heart disease (eg. Other than ASD, VSD), patient has severe pulmonary hypertension (PA systolic > 55 mm Hg, particularly if accompanied by RV dysfunction or dilation), pulmonary hypertension accompanied by other cardiac issues (e.g. such as abnormal LV function, critical coronary disease, associated valvular dysfunction), and patients with severe valvular stenosis (due to high likelihood of requiring TEE monitoring).
- Obstetrical Anesthesiologist: Patient is undergoing a complex surgery and is pregnant.
- Pediatrics Anesthesiologist: A patient has complex congenital heart disease, or is under 1 year old *from its full term birthdate*. (e.g. for a premature infant born at 30 weeks, this would be 10 + 52 weeks old). These infants have risks of delayed apnea after anesthesia.

*How to initiate a cardiac anesthesiologist consultation: Walk over to the Pre-Anesthesia Clinic and discuss the case with the Anesthesiology attending there. They will contact the cardiac anesthesiologist for review if it is indicated. Please provide any relevant information, especially if obtained from outside providers and not yet in the electronic record. The cardiac anesthesiologist will review the case and provide recommendations in ORCA.

Anesthesiology terms to be familiar with:

American Society of Anesthesiologists (ASA) Class:[1]

I-Healthy
II-Mild systemic disease
III-Severe systemic disease
IV-Severe systemic disease that is a constant threat to life
V-Moribund, not expected to survive without the operation

This classification system has been shown to be predictive of perioperative complications and mortality (e.g. one study showed mortality rates of 0.1, 0.7, 3.5, and 18.3 % for ASA class I, II, III, and IV, respectively[2])

Mallampati class: Refers to the accessibility of the oral airway as seen by the patient opening his or her mouth while seated. Ranges from Class I (can see back of throat, uvula, etc) to Class IV (can only see hard palate).

References

1. http://www.asahq.org/clinical/physicalstatus.htm ASA website, accessed online 10/1/07.
2. Wolters U, Wolf T, Stutzer H. et al. ASA classification and perioperative variables as predictors of postoperative outcome. Br J Anaesth. 1996;77:217-222.