CHAPTER 18

Preoperative Assessment, Premedication, & Perioperative Documentation

KEY CONCEPTS

1. The cornerstones of an effective preoperative evaluation are the history and physical examination, which should include a complete account of all medications taken by the patient in the recent past, all pertinent drug and contact allergies, and responses and reactions to previous anesthetics.
2. The anesthesiologist should not be expected to provide the risk-versus-benefit discussion for the proposed procedure; this is the responsibility and purview of the responsible surgeon or "proceduralist."
3. By convention physicians in many countries use the American Society of Anesthesiologists' classification to identify relative risk prior to conscious sedation and surgical anesthesia.
4. In general, the indications for cardiovascular investigations are the same in surgical patients as in any other patient.
5. Adequacy of long-term blood glucose control can be easily and rapidly assessed by measurement of hemoglobin A_{1c}.
6. In patients deemed at high risk for thrombosis (eg, those with certain mechanical heart valve implants or with atrial fibrillation and a prior thromboembolic stroke), warfarin should be replaced by intravenous heparin or, more commonly, by intramuscular heparinoids to minimize the risk.
7. Current guidelines recommend postponing all but mandatory emergency surgery until at least 1 month after any coronary intervention and suggest that treatment options *other* than a drug-eluting stent (which requires prolonged dual antiplatelet therapy) be used in patients expected to undergo a surgical procedure within 12 months after the intervention.
8. There are no good outcomes data to support restricting fluid intake (of any kind or any amount) more than 2 h before induction of general anesthesia in healthy patients undergoing elective procedures; indeed, there is evidence that nondiabetic patients should be encouraged to drink glucose-containing fluids up to 2 h before induction of anesthesia.
9. To be valuable, preoperative testing must discriminate: an increased perioperative risk exists when the results are abnormal (and unknown); a reduced risk exists when the abnormality is absent or detected (and perhaps corrected).

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10 The utility of a test depends on its sensitivity and specificity. Sensitive tests have a low rate of false-negative results and rarely fail to identify an abnormality when one is present, whereas specific tests have a low rate of false-positive results and rarely identify an abnormality when one is not present.

11 Premedication should be given purposefully, not as a mindless routine.

12 Incomplete, inaccurate, or illegible records unnecessarily complicate defending a physician against otherwise unjustified allegations of malpractice.

PREOPERATIVE EVALUATION

1 The cornerstones of an effective preoperative evaluation are the medical history and physical examination, which should include a complete account of all medications taken by the patient in the recent past, all pertinent drug and contact allergies, and responses and reactions to previous anesthetics. Additionally, this evaluation should include any indicated diagnostic tests, imaging procedures, or consultations from other physicians. The preoperative evaluation guides the anesthetic plan: inadequate preoperative planning and incomplete patient preparation are commonly associated with anesthetic complications.

The preoperative evaluation serves multiple purposes. One purpose is to identify those few patients whose outcomes likely will be improved by implementation of a specific medical treatment (which in rare circumstances may require that the planned surgery be rescheduled). For example, a 60-year-old patient scheduled for elective total hip arthroplasty who also has unstable angina from left main coronary artery disease would more likely survive if coronary artery bypass grafting is performed before the elective procedure. Another purpose is to identify patients whose condition is so poor that the proposed surgery might only hasten death without improving the quality of life. For example, a patient with severe chronic lung disease, end-stage kidney failure, liver failure, and heart failure likely would not survive to derive benefit from an 8-hour, complex, multilevel spinal fusion with instrumentation.

The preoperative evaluation can identify patients with specific characteristics that likely will influence the proposed anesthetic plan (Table 18–1). For example, the anesthetic plan may need to be reassessed for a patient whose trachea appears difficult to intubate, one with a family history of malignant hyperthermia, or one with an infection near where a proposed regional anesthetic would be

TABLE 18–1 The anesthetic plan.

Will sedative-hypnotic premedication be useful?
What type(s) of anesthesia will be employed?
General[1]
Airway management
Induction drugs
Maintenance drugs
Regional
Technique(s)
Agent(s)
Sedation and monitored anesthesia care
Supplemental oxygen
Specific sedative drugs
Are there special intraoperative management issues?
Nonstandard monitors
Positions other than supine
Relative or absolute contraindications to specific anesthetic drugs
Fluid management
Special techniques
Site (anesthetizing location) concerns
How will the patient be managed postoperatively?
Management of acute pain
Intensive care
Postoperative ventilation
Hemodynamic monitoring

[1]Including need for (or need for avoidance of) muscle relaxation.

administered. Another purpose of the evaluation is to provide the patient with an estimate of anesthetic risk. However, the anesthesiologist should not be expected to provide the risk-versus-benefit discussion for the proposed procedure; this is the responsibility and purview of the responsible surgeon or "proceduralist." For example, a discussion of the risks and benefits of robotic prostatectomy versus radiation therapy versus "watchful waiting" requires knowledge of both the medical literature and the morbidity–mortality statistics of an individual surgeon, and it would be most unusual for an anesthesiologist to have access to the necessary data for this discussion. Finally, the preoperative evaluation is an opportunity for the anesthesiologist to describe the proposed anesthetic plan in the context of the overall surgical and postoperative plan, provide the patient with psychological support, and obtain informed consent for the proposed anesthetic plan from the surgical patient.

By convention, physicians in many countries use the American Society of Anesthesiologists' (ASA) classification to define relative risk prior to conscious sedation and surgical anesthesia (Table 18–2). The ASA physical status classification has many advantages over all other risk classification tools: it is time honored, simple, reproducible, and, most importantly, it has been shown to be strongly associated with perioperative risk. But, many other risk assessment tools are available.

TABLE 18–2 American Society of Anesthesiologists' physical status classification of patients.[1]

Class	Definition
1	Normal healthy patient
2	Patient with mild systemic disease (no functional limitations)
3	Patient with severe systemic disease (some functional limitations)
4	Patient with severe systemic disease that is a constant threat to life (functionality incapacitated)
5	Moribund patient who is not expected to survive without the operation
6	Brain-dead patient whose organs are being removed for donor purposes
E	If the procedure is an emergency, the physical status is followed by "E" (for example, "2E")

[1]Data from Committee on Standards and practice Parameters, Apfelbaum JL, Connis RT, et al: Practice advisory for preanesthesia evaluation: An updated report by the American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. Anesthesiology 2012;116:522.

Elements of the Preoperative History

Patients presenting for elective surgery and anesthesia typically require a focused preoperative medical history emphasizing cardiac and pulmonary function, kidney disease, endocrine and metabolic diseases, musculoskeletal and anatomic issues relevant to airway management and regional anesthesia, and responses and reactions to previous anesthetics. The ASA publishes and periodically updates general guidelines for preoperative assessment (see Guidelines at end of Chapter).

A. Cardiovascular Issues

Guidelines for preoperative cardiac assessment are available from the American College of Cardiology/American Heart Association and from the European Society of Cardiology (see Guidelines). A more complete discussion of cardiovascular assessment is provided in Chapter 21. The focus of preoperative cardiac assessment should be on determining whether the patient's condition can and must be improved prior to the scheduled procedure, and whether the patient meets criteria for further cardiac evaluation prior to the scheduled surgery. Clearly the criteria for what must be done before elective arthroplasty will differ from what must be done before an operation for resectable pancreatic cancer, given the benign results of a delay in the former procedure and the potential life-shortening effects of a delay in the latter procedure. In general, the indications for cardiovascular investigations are the same in surgical patients as in any other patient. Put another way, the fact that a patient is scheduled to undergo surgery does not change the indications for such measures as noninvasive stress testing to diagnose coronary artery disease.

B. Pulmonary Issues

Perioperative pulmonary complications, most notably postoperative respiratory depression and respiratory failure, are vexing problems that have become seemingly more common as severe obesity and obstructive sleep apnea have increased in incidence. A recent guideline developed by the American College of Physicians takes an aggressive stance; it identifies patients 60 years of age or older, those with chronic obstructive lung disease, those with markedly reduced exercise tolerance and functional dependence, and those with heart failure as potentially requiring preoperative and postoperative interventions to avoid complications. The risk of postoperative pulmonary complications is closely associated with these factors, and with the following: ASA class (class 3 and 4 patients have a markedly increased risk of pulmonary complications relative to class 1 patients), cigarette smoking, longer surgeries (>4 h), certain types of surgery (abdominal, thoracic, aortic aneurysm, head and neck, and emergency surgery), and general anesthesia (compared with cases in which general anesthesia was not used).

Efforts at prevention of pulmonary complications should focus on cessation of cigarette smoking prior to surgery and on lung expansion techniques (eg, incentive spirometry) after surgery in patients at risk. Patients with asthma, particularly those receiving suboptimal medical management, have a greater risk for bronchospasm during airway manipulation. Appropriate use of analgesia and monitoring are key strategies for avoiding postoperative respiratory depression in patients with obstructive sleep apnea. Further discussion of this topic appears in Chapter 44.

C. Endocrine and Metabolic Issues

Appropriate targets for control of diabetes mellitus and of blood glucose in critically ill patients have been subjects of great debate over the past decade. "Tight" control of blood glucose, with a target level in the normal range, was shown in the Diabetes Control and Complications Trial to improve outcomes in ambulatory patients with type 1 diabetes mellitus. It has become the usual practice to obtain a blood glucose measurement on the morning of elective surgery. Unfortunately, many diabetic patients presenting for elective surgery do not maintain blood glucose within the desired range. Other patients, who may be unaware that they have type 2 diabetes, present with blood glucose measurements above the normal range. Adequacy of long-term blood glucose control can be easily and rapidly assessed by measurement of hemoglobin A_{1c}. In patients with abnormally elevated hemoglobin A_{1c}, referral to a diabetology service for education about the disease and adjustment of diet and medications to improve metabolic control may be beneficial. Elective surgery should be delayed in patients presenting with marked hyperglycemia; this delay might consist only of rearranging the order of scheduled cases to allow insulin infusion to bring the blood glucose concentration closer to the normal range before surgery begins. A more complete discussion of diabetes mellitus and other perioperative endocrine concerns is provided in Chapter 34.

D. Coagulation Issues

Three important coagulation issues that must be addressed during the preoperative evaluation are (1) how to manage patients who are taking warfarin on a long-term basis; (2) how to manage patients who are taking clopidogrel and related agents; and (3) how to safely provide regional anesthesia to patients who either are receiving long-term anticoagulation therapy or who will receive anticoagulation perioperatively. In the first circumstance, most patients who undergoing anything more involved than minor surgery will require discontinuation of warfarin 5 days in advance of surgery to avoid excessive blood loss. The key question to be answered is whether the patient will require "bridging" therapy with another agent while warfarin is discontinued. In patients deemed at high risk for thrombosis (eg, those with certain mechanical heart valve implants or with atrial fibrillation and a prior thromboembolic stroke), warfarin should be replaced by intravenous heparin or, more commonly, by intramuscular heparinoids to minimize the risk. In patients receiving bridging therapy for a high risk of thrombosis, the risk of death from excessive bleeding is an order of magnitude lower than the risk of death or disability from stroke if the bridging therapy is omitted. Patients at lower risk for thrombosis may have warfarin discontinued and then reinitiated

after successful surgery. Decisions regarding bridging therapy often require consultation with the physician who initiated the warfarin therapy.

Clopidogrel and related agents are most often administered with aspirin (so-called dual antiplatelet therapy) to patients with coronary artery disease who have received intracoronary stenting. Immediately after stenting, such patients are at increased risk of acute myocardial infarction if clopidogrel (or related agents) and aspirin are abruptly discontinued for a surgical procedure. 7 Therefore, current guidelines recommend postponing all but mandatory emergency surgery until at least 1 month after any coronary intervention and suggest that treatment options *other* than a drug-eluting stent (which will require prolonged dual antiplatelet therapy) be used in patients expected to undergo a surgical procedure within 12 months after the intervention (eg, in a patient with colon cancer who requires treatment for coronary disease). As the available drugs, treatment options, and consensus guidelines are updated relatively frequently, we recommend consultation with a cardiologist regarding safe management of patients receiving these agents who require a surgical procedure.

The third circumstance—when it may be safe to perform regional (particularly neuraxial) anesthesia in patients who are or will be receiving anticoagulation therapy—has also been the subject of debate among hematologists and regional anesthetists. The American Society of Regional Anesthesia publishes a periodically updated consensus guideline on this topic, and other prominent societies (eg, the European Society of Anaesthesiologists) also provide guidance on this topic. This topic is considered in greater detail in Chapter 45.

E. Gastrointestinal Issues

Since Mendelson's 1946 report, aspiration of gastric contents has been recognized as a potentially disastrous pulmonary complication of surgical anesthesia. It has also been long recognized that the risk of aspiration is increased in certain groups of patients: pregnant women in the second and third trimesters, those whose stomachs have not emptied after a recent meal, and those with serious gastroesophageal reflux disease (GERD).

Although there is a consensus that pregnant women and those who have recently (within 6 h) consumed a full meal should be treated as if they have "full" stomachs, there is less consensus as to the necessary period of time in which patients must fast before elective surgery. Proof of the lack of consensus is the fact that the ASA's guideline on this topic was voted down by the ASA House of Delegates several years in a row before it was presented in a form that received majority approval. The guideline as approved is more permissive of fluid intake than many anesthesiologists would prefer, and many medical centers have policies that are more restrictive 8 than the ASA guideline on this topic. The truth is that there are no good outcomes data to support restricting fluid intake (of any kind or any amount) more than 2 h before induction of general anesthesia in healthy patients undergoing elective procedures; indeed, there is evidence that nondiabetic patients should be encouraged to drink glucose-containing fluids up to 2 h before induction of anesthesia.

Patients with a history of GERD present vexing problems. Some of these patients will clearly be at increased risk for aspiration; others may carry this "self-diagnosis" based on television advertisements or conversations with friends and family, or may have been given this diagnosis by a physician who did not follow the standard diagnostic criteria. Our approach is to treat patients who have only occasional symptoms like any other patient without GERD, and to treat patients with consistent symptoms (multiple times per week) with medications (eg, nonparticulate antacids such as sodium citrate) and techniques (eg, tracheal intubation rather than laryngeal mask airway) as if they were at increased risk for aspiration.

Elements of the Preoperative Physical Examination

The preoperative history and physical examination complement one another: The physical examination may detect abnormalities not apparent from the history, and the history helps focus the physical examination. Examination of healthy asymptomatic patients should include measurement of vital signs (blood pressure, heart rate, respiratory rate, and

temperature) and examination of the airway, heart, lungs, and musculoskeletal system using standard techniques of inspection, auscultation, palpation, and percussion. Before procedures such as a nerve block, regional anesthesia, or invasive monitoring the relevant anatomy should be examined; evidence of infection near the site or of anatomic abnormalities may contraindicate the planned procedure (see Chapters 5, 45, and 46). An abbreviated neurological examination is important when regional anesthesia will likely be used. The preoperative neurological examination serves to document whether any neurological deficits may be present *before* the block is performed.

The anesthesiologist must examine the patient's airway before every anesthetic procedure. The patient's dentition should be inspected for loose or chipped teeth, caps, bridges, or dentures. Poor fit of the anesthesia mask should be expected in edentulous patients and those with significant facial abnormalities. Micrognathia (a short distance between the chin and the hyoid bone), prominent upper incisors, a large tongue, limited range of motion of the temporomandibular joint or cervical spine, or a short or thick neck suggest that difficulty may be encountered in direct laryngoscopy for tracheal intubation (see Chapter 19).

Preoperative Laboratory Testing

Routine laboratory testing when patients are fit and asymptomatic is not recommended. Testing should be guided by the history and physical examination. "Routine" testing is expensive and rarely alters perioperative management; moreover, abnormal values often are overlooked or if recognized may result in unnecessary delays. Nonetheless, despite the lack of evidence of benefit, many physicians order a hematocrit or hemoglobin concentration, urinalysis, serum electrolyte measurements, coagulation studies, an electrocardiogram, and a chest radiograph for all patients, perhaps in the misplaced hope of reducing their exposure to litigation.

9 To be valuable, preoperative testing must discriminate: there must be an increased perioperative risk when the results are abnormal (and unknown when the test is not performed), and there must be a reduced risk when the abnormality is not detected (or it has been corrected). This requires that the test have a very low rate of false-positive and false-negative results. **The utility of a test depends on its sensitivity and specificity. Sensitive tests have a low rate of false-negative results and rarely fail to identify an abnormality when one is present, whereas specific tests have a low rate of false-positive results and rarely identify an abnormality when one is not present.** The prevalence of a disease or of an abnormal test result varies with the population tested. Testing is therefore most effective when sensitive and specific tests are used in patients in whom the abnormality will be detected frequently enough to justify the expense and inconvenience of the test procedure. Accordingly, laboratory testing should be based on the presence or absence of underlying diseases and drug therapy as detected by the history and physical examination. The nature of the proposed surgery or procedure should also be taken into consideration. Thus, a baseline hemoglobin or hematocrit measurement is desirable in any patient about to undergo a procedure that may result in extensive blood loss and require transfusion, particularly when there is sufficient time to correct anemia preoperatively (eg, with iron supplements).

10

Testing fertile women for an undiagnosed early pregnancy is controversial and should not be done without the permission of the patient; pregnancy testing involves detection of chorionic gonadotropin in urine or serum. Routine testing for HIV antibody is not indicated. Routine coagulation studies and urinalysis are not cost-effective in asymptomatic healthy patients; nevertheless, a preoperative urinalysis is required by state law in at least one U.S. jurisdiction.

PREMEDICATION

A classic study showed that a preoperative visit from an anesthesiologist resulted in a greater reduction in patient anxiety than preoperative sedative drugs. Yet, there was a time when virtually every patient received premedication before arriving in the preoperative area in anticipation of surgery. Despite the evidence, the belief was that all patients benefitted from sedation and anticholinergics, and most patients would benefit from a preoperative opioid. After such premedication, some patients arrived

in a nearly anesthetized state. With the move to outpatient surgery and "same-day" hospital admission, the practice has shifted. Today, preoperative sedative-hypnotics or opioids are almost never administered before patients arrive in the preoperative holding area (other than for intubated patients who have been previously sedated in the intensive care unit). Children, especially those aged 2–10 years who will experience separation anxiety on being removed from their parent, may benefit from premedication administered in the preoperative holding area. This topic is discussed in Chapter 42. Midazolam, administered either intravenously or orally, is a common method. Adults often receive intravenous midazolam (2–5 mg) once an intravenous line has been established, and if a painful procedure (eg, regional block or a central venous line) will be performed while the patient remains awake, small doses of opioid (typically fentanyl) will often be given. Patients who will undergo airway surgery or extensive airway manipulations benefit from preoperative administration of an anticholinergic agent (glycopyrrolate or atropine) to reduce airway secretions before and during surgery. The fundamental message here is that premedication should be given purposefully, not as a mindless routine.

11

DOCUMENTATION

Physicians should first and foremost provide high-quality and efficient medical care. Secondly, they must document the care that has been provided. Adequate documentation provides guidance to those who may encounter the patient in the future. It permits others to assess the quality of the care that was given and to provide risk adjustment of outcomes. Adequate documentation is required for a physician to submit a bill for his or her services. Finally, adequate and well-organized documentation (as opposed to inadequate and sloppy documentation) supports a potential defense case should a claim for medical malpractice be filed.

Preoperative Assessment Note

The preoperative assessment note should appear in the patient's permanent medical record and should describe pertinent findings, including the medical history, anesthetic history, current medications (and whether they were taken on the day of surgery), physical examination, ASA physical status class, laboratory results, interpretation of imaging, electrocardiograms, and recommendations of any consultants. A comment is particularly important when the consultant's recommendation will not be followed. As most North American hospitals are transitioning to electronic medical records, the preanesthetic note will often appear as a standardized form.

The preoperative note should briefly describe the anesthetic plan and include a statement regarding informed consent from the patient (or guardian). The plan should indicate whether regional or general anesthesia (or sedation) will be used, and whether invasive monitoring or other advanced techniques will be employed. Documentation of the informed consent discussion sometimes takes the form of a narrative indicating that the plan, alternative plans, and their advantages and disadvantages (including their relative risks) were presented, understood, and accepted by the patient. Alternatively, the patient may be asked to sign a special anesthesia consent form that contains the same information. A sample preanesthetic report form is illustrated in **Figure 18–1**.

In the United States, The Joint Commission (TJC) requires an immediate preanesthetic reevaluation to determine whether the patient's status has changed in the time since the preoperative evaluation was performed. Even when the elapsed time is less than a minute, the bureaucracy will not be denied: the "box" must be checked to indicate that there has been no interval change.

Intraoperative Anesthesia Record

The intraoperative anesthesia record (**Figure 18–2**) serves many purposes. It functions as documentation of intraoperative monitoring, a reference for future anesthetics for that patient, and a source of data for quality assurance. This record should be terse, pertinent, and accurate. Increasingly, parts of the anesthesia record are generated automatically and recorded electronically. Such anesthesia information management systems (commonly abbreviated AIMS) have many theoretical and practical advantages over the traditional paper record but also introduce all the common pitfalls of

ANESTHESIOLOGY PREOPERATIVE NOTE

DATE: TIME: HT. PREOP DIAGNOSIS:

AGE: SEX: M F WT. PROPOSED OPERATION:

MEDICAL HISTORY **MEDICATIONS:**
ALLERGIES:
INTOLERANCES:
DRUG USE: TOBACCO: ETOH:

PRESENT PROBLEM:
CARDIOVASCULAR
RESPIRATORY
DIABETES
NEUROLOGIC RENAL
ARTHRITIS/MUSCULO-SKELETAL HEPATIC
OTHER

PREVIOUS ANESTHETICS:

FAMILY HISTORY
LAST ORAL INTAKE

PHYSICAL EXAMINATION **BP** **P** **R** **T**

HEART EXTREMITIES
LUNGS NEUROLOGIC
AIRWAY OTHER
TEETH

LABORATORY

Hct/Hgb ECG CHEST X-RAY
URINE
LYTES: Na Cl
K GLUCOSE OTHER
CO_2 BUN: CREATININE

PLAN
☐ GENERAL
☐ REGIONAL
☐ MONITORED ANESTHESIA CARE

INVASIVE MONITORS
SPECIAL TECHNIQUES

ASA CLASS SIGNATURE _____ (RESIDENT) _____ (STAFF) M.D.

PATIENT CONSENT
ANESTHETIC ALTERNATIVES AND RISKS RANGING FROM TOOTH DAMAGE TO LIFE-THREATENING EVENTS HAVE BEEN EXPLAINED AND ACCEPTED.

PATIENT'S SIGNATURE

PATIENT NAME

#

FIGURE 18–1 A sample preoperative note.

ANESTHESIA RECORD

AGE:_____ **SEX:** M F **PRE MED:** S U _____ **ASA** _____

DENTITION _____ **NPO** _____ **PROPOSED SURGERY** _____

☐ **PT. IDED** ☐ **CONSENT ✓ED** ☐ **CHART REVIEWED** **SURGEON** _____

OPERATION PERFORMED _____

PRE OP: BP_____ P_____ R _____ T _____ Hct _____ **ALLERGIES** _____

TIME **TOTALS**

OXYGEN
NITROUS OXIDE
HALO/ENFL/ISOFL/DES/SEVO

TEMP
URINE

FLUIDS/BLOOD

IV # _____

BP SYS DIA

PULSE •

RESP. ASSISTED SPONT. CONTROLLED

ECG
FiO_2
$EtCO_2$
SaO_2
Et_A
Temp

240 220 200 180 160 140 120 100 80 60 40 20 0

MONITORS:

- ☐ MACHINE ✓ED
- ☐ OXIMETER
- ☐ BP. SITE
- ☐ EKG
- ☐ FLUID WARMER
- ☐ PRECORDIAL
- ☐ TEMP
- ☐ HUMIDIFIER
- ☐ BLANKET WARM/COOL
- ☐ RAPID TRANSFER
- ☐ FORCED AIR WARMER
- ☐ FiO_2
- ☐ $EtCO_2$
- ☐ ESOPH
- ☐ NERVE STIM
- ☐ CVP
- ☐ A-LINE
- ☐ PA CATHETER

VENT. VT/RR
AIRWAY P

BLOOD LOSS
POSITION

☐ MONITORED ANESTHESIA CARE
☐ REGIONAL
☐ GENERAL
BLADE _____
ETT# _____
BBS _____
CUFF _____ cc.
☐ ATRAUMATIC
☐ CO_2
COMMENTS:

EYE PROTECTION:

ANESTH. START _____
ANESTH. INDUC _____
SURG. START _____
SURG. END _____
ANESTH. END _____
ANESTH. NET _____

REMARKS: _____

RECOVERY ROOM B.P. _____ P. _____ R.R. _____ TIME _____ O_2 SAT. _____

CONDITION _____

_____ **M.D.**
SIGNED (RESIDENT)

_____ **M.D.**
SIGNED (STAFF)

_____
DATE

PAGE_____ OF _____

PATIENT NAME

#

FIGURE 18–2 A representative intraoperative anesthesia record. These paper "charts" are rapidly being replaced by computerized anesthesia information management systems.

computerization, including the potential for unrecognized recording of artifactual data, the possibility that practitioners will find attending to the computer more interesting than attending to the patient, and the inevitable occurrence of device and software shutdowns. Regardless of whether the record is on paper or electronic it should document the anesthetic care in the operating room by including the following elements:

- Whether there has been a preoperative check of the anesthesia machine and other relevant equipment.
- Whether there has been a reevaluation of the patient immediately prior to induction of anesthesia (a TJC requirement); this generally includes a review of the medical record to search for any new laboratory results or consultation reports.
- Time of administration, dosage, and route of drugs given intraoperatively.
- Intraoperative estimates of blood loss and urinary output.
- Results of laboratory tests obtained during the operation.
- Intravenous fluids and any blood products administered.
- Pertinent procedure notes (such as for tracheal intubation or insertion of invasive monitors).
- A notation regarding specialized intraoperative techniques such as the mode of ventilation, or special techniques such as the use of hypotensive anesthesia, one-lung ventilation, high-frequency jet ventilation, or cardiopulmonary bypass.
- Timing and conduct of intraoperative events such as induction, positioning, surgical incision, and extubation.
- Unusual events or complications (eg, arrhythmias).
- Condition of the patient at the time of release to the postanesthesia or intensive care unit nurse.

By tradition and convention (and, in the United States, according to practice guidelines) arterial blood pressure and heart rate are recorded graphically no less frequently than at 5-min intervals. Data from other monitors are also usually entered graphically, whereas descriptions of techniques or complications are described in text. In some anesthetizing locations of most hospitals the computerized AIMS will be unavailable. Unfortunately, the conventional, handwritten intraoperative anesthetic record often proves inadequate for documenting critical incidents, such as a cardiac arrest. In such cases, a separate text note inserted in the patient's medical record may be necessary. Careful recording of the timing of events is needed to avoid discrepancies between multiple simultaneous records (anesthesia record, nurses' notes, cardiopulmonary resuscitation record, and other physicians' entries in the medical record). Such discrepancies are frequently targeted by malpractice attorneys as evidence of incompetence, inaccuracy, or deceit. Incomplete, inaccurate, or illegible records unnecessarily complicate defending a physician against otherwise unjustified allegations of malpractice.

12

Postoperative Notes

The anesthesiologist's immediate responsibility to the patient does not end until the patient has recovered from the effects of the anesthetic. After accompanying the patient to the postanesthesia care unit (PACU), the anesthesiologist should remain with the patient until normal vital signs have been measured and the patient's condition is deemed stable. Before discharge from the PACU, a note should be written by the anesthesiologist to document the patient's recovery from anesthesia, any apparent anesthesia-related complications, the immediate postoperative condition of the patient, and the patient's disposition (discharge to an outpatient area, an inpatient ward, an intensive care unit, or home). In the United States, as of 2009, the Centers for Medicare and Medicaid Services require that certain elements be included in all postoperative notes (Table 18–3). Recovery from anesthesia should be assessed at least once within 48 h after discharge from the PACU in all inpatients. Postoperative notes should document the general condition of the patient, the presence or absence of any anesthesia-related complications, and any measures undertaken to treat such complications.

TABLE 18–3 Elements required by the Center for Medicare and Medicaid Services in all postoperative notes.[1]

Respiratory function, including respiratory rate, airway patency, and oxygen saturation
Cardiovascular function, including pulse rate and blood pressure
Mental status
Temperature
Pain
Nausea and vomiting
Postoperative hydration

[1]Data from the Centers for Medicare and Medicaid Services (CMS): *Revised Anesthesia Services Interpretive Guidelines*, issued December 2009. Available at: http://www.kdheks.gov/bhfr/download/Appendix_L.pdf (accessed September 1, 2012).

CASE DISCUSSION

Medical Malpractice (also see Chapter 54)

A healthy 45-year-old man has a cardiac arrest during an elective laparoscopic inguinal hernia repair. Although cardiopulmonary resuscitation is successful, the patient is left with permanent changes in mental status that preclude his return to work. One year later, the patient files a complaint against the anesthesiologist, surgeon, and hospital.

What four elements must be proved by the plaintiff (patient) to establish negligence on the part of the defendant (physician or hospital)?

1. *Duty:* Once a physician establishes a professional relationship with a patient, the physician owes that patient certain obligations, such as adhering to the "standard of care."
2. *Breach of Duty:* If these obligations are not fulfilled, the physician has breached his duties to the patient.
3. *Injury:* An injury must result. The injury may result in general damages (eg, pain and suffering) or special damages (eg, loss of income).
4. *Causation:* The plaintiff must demonstrate that the breach of duty was causally related to the injury. But for the breach of duty, the injury should not have occurred. This proximate cause does not have to be the most important or immediate cause of the injury.

How is the standard of care defined and established?

Individual physicians are expected to perform as any prudent and reasonable physician would in similar circumstances. This does *not* require "best" care or optimal care, only that the care meet the minimum standard of a prudent and reasonable physician. As a specialist, the anesthesiologist is held to a higher standard of knowledge and skill with respect to the subject matter of that specialty than would a general practitioner or a physician in another specialty. Expert witnesses usually provide testimony to define the standard of care in legal proceedings. Although most jurisdictions have extended the "locality rule" to encompass a national standard of care, medical malpractice cases are governed by the laws of the jurisdiction in which the event took place and these may differ from state to state. The specific circumstances pertaining to each individual case are taken into account. The law recognizes that there are differences of opinion and varying schools of thought within the medical profession.

How is causation determined?

It is usually the plaintiff who bears the burden of proving that the injury would not have occurred "but for" the negligence of the physician, or that the physician's action was a "substantial factor" in causing the injury. An exception is the doctrine of *res ipsa loquitur* ("the thing speaks for itself"), which permits a finding of negligence based solely on the evidence. For example, if a set of car keys were visualized inside a patient on a chest radiograph after a thoracotomy, the doctrine of res ipsa loquitur would apply. Res ipsa loquitur could not be used in the case under discussion because the plaintiff would have to establish that cardiac arrest could not occur in the absence of negligence and that cardiac arrest could not have been due to something outside the control of the anesthesiologist. An important concept is that causation in civil cases need only be established

by a preponderance of the evidence ("more likely than not")—as opposed to criminal cases, in which all elements of a charged offense must be proved "beyond a reasonable doubt."

What factors influence the likelihood of a malpractice suit?

1. *The Physician–Patient Relationship:* This is particularly important for the anesthesiologist, who usually does not meet the patient until immediately before the operation. Another problem is that the patient is unconscious while under the anesthesiologist's care. Thus, the preoperative and postoperative visits with the patient are often the only opportunities to establish a good relationship with the patient. Family members should also be included during these meetings with patients (provided the patient does not object), particularly during the postoperative visit if there has been an intraoperative complication.
2. *Adequacy of Informed Consent:* Rendering care to a competent patient who does not consent constitutes assault and battery. Consent is not enough, however. The patient should be informed of the contemplated procedure, including its reasonably anticipated risks, its possible benefits, and the therapeutic alternatives. The physician may be liable for a complication—even if it is not due to the negligent performance of a procedure—if a jury is convinced that a reasonable person would have refused treatment if properly informed of the possibility of the complication. This does not mean, of course, that a documented consent relieves from liability physicians who violate the standard of care.
3. *Quality of Documentation:* Careful documentation of the perioperative visits, informed consent, consultations with other specialists, intraoperative events, and postoperative care is essential. The viewpoint of many courts and juries, reinforced by plaintiff's attorneys, is that "if it isn't written, it wasn't done." It goes without saying that medical records should never be intentionally destroyed or altered.

GUIDELINES

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SUGGESTED READING

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