

Systematic approach of pre-operative assessment and optimization.

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The speciality of Anaesthesiology is focused on providing safe and effective anaesthesia during surgery and other procedures. Because of many advances in anaesthesia technique, anaesthesia is very safe for the vast majority of patients, including those with heart disease and other serious medical conditions. In all cases in which a patient will require anaesthesia, the anaesthesiologist will perform a preoperative evaluation. For very simple, low-risk procedures in completely healthy young patients, this evaluation may take place immediately prior to your procedure when you meet your anaesthesiologist on the day of surgery. However, often the surgeon or anaesthesiologist may want to evaluate you a few days before your surgery. Such evaluations may take place in a PreAnaesthesia Evaluation clinic. The evaluation occurs during a clinic visit, it is an opportunity for the anaesthesiologist to learn more about patient general health and how it may be affected by anaesthesia, and it is also a chance for the patient to ask your anaesthesiologist questions about the anaesthetic risks and choices.

Definition

Anaesthesia evaluation refers to the series of interviews, physical examinations, and laboratory tests that are generally used to assess the general fitness of patients scheduled for surgery and to determine the need for special precautions or additional testing. There is no universally accepted definition of anaesthesia evaluation as of 2003; however, the Task Force on Preanaesthesia Evaluation of the American Society of Anaesthesiologists (ASA) has tentatively defined it as “...the process of clinical assessment that precedes the delivery of anaesthesia care for surgery and for non-surgical procedures.” Anaesthesia evaluation is usually discussed in the context of elective or scheduled surgical procedures rather than emergency surgery.

Anaesthesia evaluation is a relatively recent development in preoperative patient care. Prior to the 1970s, anaesthesiologists were often given only brief notes or outlines of the patient’s history and physical examination written by the operating surgeon or the patient’s internist. This approach became increasingly unsatisfactory as the practice of anesthesiology became more complex. In the last four decades, the introduction of new anesthetics and other medications, laser-assisted surgical procedures, increasingly sophisticated monitoring equipment, and new discoveries in molecular biochemistry and genetics have made the anaesthesiologist’s role more demanding. During the 1980s and 1990s, some departments of anesthesiology in large urban

medical centers and major university teaching hospitals began to set up separate clinics for anaesthesia evaluation in order to improve the assessment of patients before surgery.

Purpose

Anaesthesia evaluation has several different purposes. The information that is obtained during the evaluation may be used to:

- Guide the selection of anesthetics and other medications to be used during surgery.
- Plan for the patient's postoperative recovery and pain management.
- Educate the patient about the operation itself, the possible outcomes, and self-care during recovery at home.
- Determine the need for additional staff during or after surgery.
- Minimize confusion caused by rescheduling operations because of last-minute discoveries about patients' health.
- Improve patient safety and quality of care by collecting data for later review and analysis. The ASA has noted that few controlled trials of different approaches to anaesthesia evaluation have been conducted as of 2003, and that further research is needed.

Description

There are several parts or stages in a typical anaesthesia evaluation. The evaluation itself may be done in the hospital where the operation is scheduled, or in a separate facility attached to the hospital. The timing of the evaluation is affected by two major variables: the invasiveness of the operation to be performed and the patient's overall physical condition. An invasive operation or procedure is one that requires the surgeon to insert a needle, catheter, or instrument into the body or a part of the body. Surgical procedures are classified as high, medium, or low in invasiveness. Procedures that involve opening the chest, abdomen, or skull are usually considered highly invasive. Examples of less invasive procedures would include tooth extraction, most forms of cosmetic surgery, and operations on the hands and feet.

The patient's physical condition is classified according to the ASA's six-point system as follows:

- ASA 1. Normal healthy patient.
- ASA 2. Patient with mild systemic disease.
- ASA 3. Patient with severe systemic disease.
- ASA 4. Patient with severe systemic disease that is life-threatening.
- ASA 5. Moribund (dying) patient who is not expected to survive without an operation.
- ASA 6. Brain-dead patient whose organs are being removed for donation.

As of 2003, the ASA recommends that patients with severe disease be interviewed and have their physical examination before the day of surgery. Patients in good health or with mild systemic disease who are scheduled for a highly invasive procedure should also be interviewed and examined before the day of surgery. Patients in categories P1 and P2 who are scheduled for low- or medium-invasive procedures may be evaluated on the day of surgery or before it.

Patient history and records

The first part of an anaesthesia evaluation is the anaesthesiologist's review of the patient's medical history and records. This review allows the anaesthesiologist to evaluate the patient for risk factors that may increase the patient's sensitivity to the sedatives or other medications given before and during the operation; increase the danger of complications related to heart function and breathing; and increase the difficulty of treating such complications.

These risk factors may include:

- Heart or lung disease. These diseases often require the anaesthesiologist to lower the dosages of sedatives and pain-control medications.
- Liver or kidney disease. Disorders of these organs often slow down the rate of medication clearance from the patient's body.
- Present prescription medications. These may interact with the sedatives given before the operation or with the anesthetic agent.
- Herbal preparations and other alternative medicines. Some herbal preparations, particularly those taken for insomnia or anxiety (St. John's wort, valerian, kava kava) may intensify the effects of anesthetics. Others, like ginseng or ginkgo biloba, may affect blood pressure or blood clotting. It is important for patients to include alternative health products in the list of medications that they give the doctor.
- Allergies, particularly allergies to medications.
- Alcohol or substance abuse. Substance use typically affects patients' responses to sedatives and anesthetics in one of two ways. If the patient has developed a tolerance for alcohol or another drug of abuse, he or she may require an increased dose of sedatives or pain medications. On the other hand, if the patient has recently consumed a large amount of alcohol or other mood-altering substance, it may interact with the anesthetic by intensifying its effects.
- Smoking. Smoking increases the risk of coughing, bronchospasm, or other airway problems during the operation.
- Previous adverse reactions to sedatives or anesthetics. A family history of anaesthesia problems should be included because some adverse reactions are genetically determined.
- Age. The elderly and children below the age of puberty do not respond to medications in the same way as adults, and the anaesthesiologist must often adjust dosages. In addition, elderly patients often take a number of different prescription medications, each of which may interact with anesthetics in a different way.

Patient interview

The anaesthesiologist is responsible for interviewing the patient during the anaesthesia evaluation. The interview serves in part as additional verification of the patient's identity; cases have been reported in which patients have been scheduled for the wrong procedure because of administrative errors. The anaesthesiologist will check the patient's name, date of birth, medical record number, and type or location of scheduled surgery for any inconsistencies. Although the anaesthesiologist will ask for some of the same information that is included in the patient's written medical records, he or she may have additional questions. Moreover, it is not unusual for

patients to recall significant events or details during the interview that were left out of the written records. The anaesthesiologist will explain what will happen during the operation and give instructions about fasting, discontinuing medications, and other precautions that the patient should take before the procedure. The patient will have an opportunity to ask questions about choice of anesthetic and other concerns during the interview.

Physical examination

The physical examination will focus on three primary areas of concern: the heart and circulatory system; the respiratory system; and the patient's airway. Heart and lung function are evaluated because surgery under general anaesthesia puts these organ systems under considerable stress. The usual tests performed to evaluate heart and lung fitness are an electrocardiogram (ECG) and chest x-ray (CXR). These tests may be omitted if the patient was tested within the previous six months and the results were normal. If the patient has an ECG and CXR as part of the anaesthesia evaluation and the findings are abnormal, the doctor may order additional tests of heart and lung function. These may include stress or exercise tests; echocardiography ; angiography; pulmonary function tests (PFTs); and a computed tomography (CT) scan of the lungs.

Assessment of the airway includes an examination of the patient's teeth, nasal passages, mouth, and throat to check for any signs of disease or structural abnormalities. Certain physical features, such as an abnormally shaped windpipe, prominent upper incisor teeth, an abnormally small mouth opening, a short or inflexible neck, a throat infection, large or swollen tonsils, and a protruding or receding chin can all increase the risk of airway problems during the operation. A commonly used classification scheme rates patients on a four-point scale, with Class I being the least likely to have airway problems under anaesthesia and Class IV the most likely.

Laboratory tests

Laboratory tests are categorized as either routine, meaning that they are given to all patients as part of the anaesthesia evaluation, or indicated, which means that the test is ordered for a specific reason for a particular patient. Routine preoperative laboratory tests include blood tests and urine tests. Blood samples are taken for white and red blood cell counts and coagulation studies; tests of kidney function, most commonly measurements of blood urea nitrogen (BUN) and creatinine; and measurements of blood glucose and electrolyte levels. Urine samples are taken to evaluate the patient's nutritional status, to test for diabetes or the presence of a urinary tract infection, and to determine whether the patient is dehydrated. Some hospitals will accept blood and urine tests performed within six weeks of the operation if the results were within normal ranges. Some facilities also routinely test urine samples from women of childbearing age for pregnancy.

Indicated laboratory tests include platelet counts, certain blood chemistry measurements, and measurements of blood hemoglobin levels. These tests are usually performed for patients with blood or endocrine disorders; persons taking blood-thinning medications; persons who have been

treated with some types of alternative therapy; and persons who are known to have kidney or liver disorders.

Consultations

The anaesthesiologist may consult other doctors as part of the anaesthesia evaluation in order to obtain additional information about the patient's condition. Consultations are often necessary if the patient is very young or very old; is being treated for cancer; or has a rare disease or disorder.

Preparation

Patients can prepare for an anaesthesia evaluation by gathering information beforehand to give the hospital or clinic staff. This information includes such matters as insurance cards and documentation; a list of medications presently taken and their dosages; a list of previous operations or hospitalizations, if any; the names and telephone numbers of other physicians who have been consulted within the past two years; information about allergies to medications, if any; the name and telephone number of a designated family member or primary contact; and similar matters.

Summary and Conclusions.

A *preanaesthesia evaluation* involves the assessment of information from multiple sources, including medical records, patient interviews, physical examinations, and findings from preoperative tests. At a minimum, a directed preanesthetic physical examination should include an assessment of the airway, lungs, and heart.
