Patient Evaluation and Preparation

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a. History should be recorded
b. A complete physical examination performed before anesthesia.

physical health, pain and stress status, and anesthetic risk. Appropriate medical and nursing issues should be reviewed and provided before producing anesthesia.

Preanesthetic Evaluation

The purpose of the preanesthetic patient evaluation is to determine a patient's physical status.

Physical status refers to the presence or absence of disease, severity of pain (if present), and the level of stress.

Specifically, the term refers to a patient's medical condition, including the degree of pain and stress and the overall efficiency and function of organ systems.

The goal is to determine any deviations from the normal that will affect anesthetic uptake, action, elimination, and safety.

Organ systems of greatest concern are the nervous, cardiopulmonary, hepatic, and renal.

Knowledge of the physical status is an aid to selection of anesthetic drugs and techniques and arriving at a preanesthetic prognosis.

Physical status is determined by
(a) history, including an assessment of pain;
(b) inspection (attitude, condition, conformation, temperament, stress, or distress);
(c) palpation, percussion, and auscultation; and
(d) laboratory determinations and special procedures (e.g., radiographs). Any abnormalities should be noted.

Those that can be corrected should be. If no further improvement can be reasonably corrected by medical treatment, the patient's overall risk and prognosis can be determined.

The history and physical examination are the best determinants of the presence of disease. Laboratory tests should be done on the basis of the physical exam and history. All body systems should be examined and any abnormalities identified.

The physical examination and medical history will determine the extent to which laboratory tests and special procedures are necessary. In all but extreme emergencies, packed cell volume and plasma protein concentration should be routinely determined.

Contingent on the medical history and physical examination, additional evaluations may include

a. complete blood counts;
b. urinalysis; blood chemistries to identify the status of kidney and liver function, blood gases, and pH;
c. electrocardiography;
d. clotting time and platelet counts;
e. fecal and/or filarial examinations;
f. blood electrolyte determinations.

Tests should not be run unless it is suspected their results could cause a change in anesthetic management.

g. Radiographic and/or fluoroscopic examination may also be indicated, especially in animals, such as primates, calves, sheep, and rodents, that are susceptible to chronic respiratory infections.

The use of extensive laboratory screening of patients has not been found to improve the outcome of surgical patients in either human or veterinary medicine. When an abnormal value is reported, surgery is delayed and the test rerun, adding to the total cost of the procedure, with little patient benefit.

Although such evaluation is important in all patients, it is especially important in critically ill patients. In addition to body weight and vital signs, the following should be included: **The history should include**

a. previous and current health;
b. presenting complaint, its severity, and its duration;
c. concurrent symptoms of disease (e.g., diarrhea, vomiting, exercise intolerance, ascites, rales, dyspnea, and polyurea-polydipsia);
d. pregnancy;
e. exposure to drugs;
f. prior anesthetic history; and
g. Recent feeding.

Especially important to consider are the status of cardiopulmonary function, the potential of acid-base or electrolyte imbalance, the possibility of a full or distended stomach or of hepatic or renal disease, and the prior or concurrent administration of drugs (e.g., organophosphates, diuretics, digitalis preparations, anticonvulsants, corticosteroids, aminoglycoside antibiotics, sulfonamides, and nonsteroidal anti-inflammatory drugs).

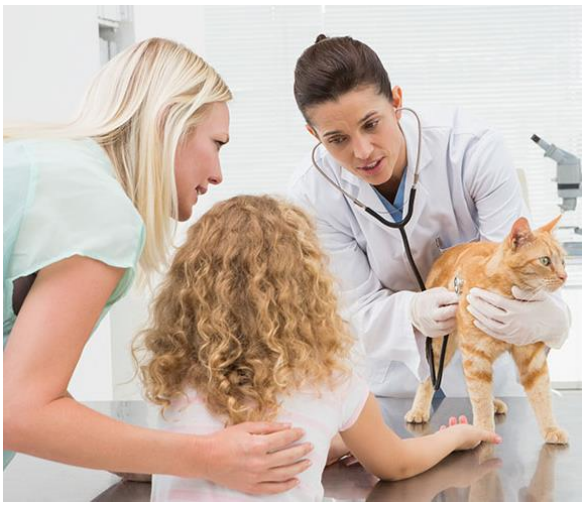
Following examination, the physical status of the patient should be classified as to its general state of health according to the American Society of Anesthesiologists (ASA) classification and the information recorded;

Table 2.7. Classification of physical status[a]

Category	Physical Status	Possible Examples of This Category
I	Normal healthy patients	No discernible disease; animals entered for ovariohysterectomy, ear trim, caudectomy, or castration
II	Patients with mild systemic disease	Skin tumor, fracture without shock, uncomplicated hernia, cryptorchidectomy, localized infection, or compensated cardiac disease
III	Patients with severe systemic disease	Fever, dehydration, anemia, cachexia, or moderate hypovolemia
IV	Patients with severe systemic disease that is a constant threat to life	Uremia, toxemia, severe dehydration and hypovolemia, anemia, cardiac decompensation, emaciation, or high fever
V	Moribund patients not expected to survive 1 day with or without operation	Extreme shock and dehydration, terminal malignancy or infection, or severe trauma

[a]This classification is the same as that adopted by the American Society of Anesthesiologists.

This mental exercise forces the anesthetist to evaluate the patient's condition and proves valuable in the proper selection of anesthetic drugs.

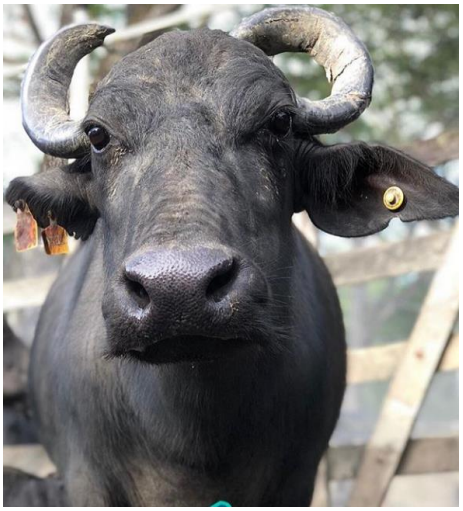


The preliminary physical examination should be done in the owner's presence, if possible, so that a prognosis can be given personally. This allows the client to ask questions and enables the veterinarian to communicate the risks of anesthesia and allay any fears regarding management of the patient.

Patient Preparation

Too often, operations are undertaken with inadequate preparation of patients. With most types of general anesthesia, it is best to have patients off feed for 12 h previously.

Some species are adversely affected by fasting. Birds, neonates, and small mammals may become hypoglycemic within a few hours of starvation, and mobilization of glycogen stores may alter rates of drug metabolism and clearance.



The latter may be a factor in ruminants. In contrast, feeding dogs increases their metabolic rate for up to 18 h. Induction of anesthesia in animals having a full stomach should be avoided, if at all possible, because of the hazards of aspiration.
Distension of the rumen in sheep and larger ruminants has been shown to impair ventilation, with consequent hypoxemia and hypercapnia.

In horses, a full stomach may rupture during induction and casting. Although limitation of food does not empty the rumen, the possibility of regurgitation is perhaps reduced if water is withheld for 12 to 24 h prior to induction.

In most species, especially in the young and aged, water is usually offered up to the time that preanesthetic agents are administered. It should be remembered that many older animals suffer from renal disease.

In any case, it is good anesthetic practice to administer intravenous fluids during anesthesia to help maintain adequate blood pressure and urine production, and to provide an available route for drug administration.

Systemic administration of antibiotics preoperatively is a helpful prophylactic measure prior to major surgery or if contamination of the

operative site is anticipated and antibiotics ideally are given I or 2 h before anesthetic induction begins.

Dehydrated animals should be treated with fluids and appropriate alimentation prior to operation; fluid therapy should be continued as required. The delay occasioned by administration of fluids is more than compensated for by the animal's increased ability to withstand the stress of anesthesia and surgical trespass.

Anemia and hypovolemia, as determined clinically and hematologically, should be corrected by administration of whole blood or blood components and balanced electrolyte solutions. Patients in shock without blood loss or in a state of nutritional deficiency benefit by administration of plasma.

Several conditions may severely restrict effective ventilation. These include

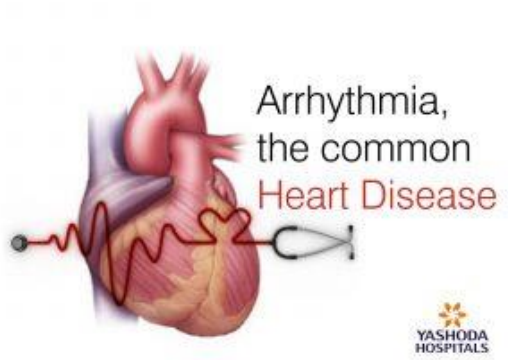
a. upper-airway obstruction by masses or abscesses,
b. pneumothorax,
c. hemothorax,
d. pyothorax,
e. diaphragmatic hernia, and
f. gastric or rumen distention.

Affected animals are often in a marginal state of oxygenation. Oxygen administration by nasal catheter or mask is indicated if the patient will accept it.

A tracheotomy may be performed under local anesthesia prior to induction. Intrapleural air or fluid should be removed by aspiration prior to induction, because the effective lung volume may be greatly reduced and severe respiratory embarrassment may occur on induction.

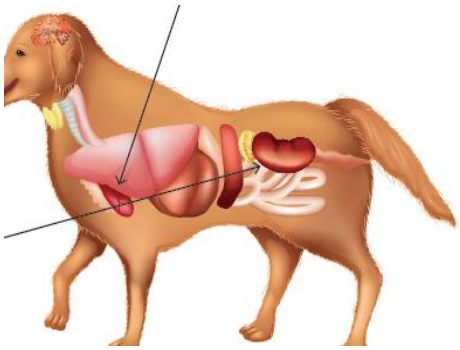
Although no attempt should be made to insert an endotracheal catheter in these patients prior to anesthesia, this must be done immediately after induction.

Animals having such infections should receive specific therapy prior to anesthesia, and, local or regional anesthesia should be strongly considered.



Heart disease is a contraindication for general anesthesia. If animals must be anesthetized, an attempt at compensation through appropriate antiarrhythmic drugs, and diuresis should be made prior to anesthesia.

If ascites is present, this fluid should be aspirated to reduce excessive pressure on the diaphragm.



In cases of hepatic or renal insufficiency-for instance, in many bacterial and viral infections of mice, dogs, or primates, or in parasitism of calves, sheep, and rabbits-the mode of anesthetic elimination should receive strong consideration, with inhalation anesthesia preferred.

Just prior to induction, it is desirable to encourage defecation and/or urination by giving animals access to a run or exercise pen. If this attempt is unsuccessful, catheterization or bladder compression may be necessary prior to surgery. Once an animal is anesthetized, the bladder can be emptied by slow, steady compression through the abdominal

wall or by catheterization. An empty bladder is an advantage in abdominal surgery because urine may contaminate the operative field.

During anesthesia, patients should, if possible, be restrained in a normal physiological position. Compression of the chest, acute angulation of the neck, overextension or compression of limbs, and compression of the posterior vena cava by large viscera can all lead to serious compromise.

Complications include hypoventilation, nerve and/or muscle damage, and impaired venous return. Horses are especially susceptible to myopathy and/or neuropathy caused by excessive extension, abduction, or compression and ischemia of the muscles. Such complications are more likely to occur when good relaxation is achieved or when blood pressure is depressed and recumbency is prolonged in a lateral position.

Such a position also adversely affects ventilation- perfusion ratios and thereby the efficiency of gas exchange within the lungs. The inefficiency of respiratory exchange may be greater in one position than another.

In all species, the head should be extended to provide a free airway and to prevent kinking of the endotracheal tube.

In ruminants, it is desirable to have the head tilted down to enable drainage of saliva. Downward tilting of the hindquarters and

abdomen (below the thorax), with minimal compression of the abdomen, limits reflux of rumen contents.

On induction, if active regurgitation begins with large volumes of ruminal contents flowing into the pharyngeal cavity, pressure should be applied immediately by externally grasping the esophagus dorsal to the trachea to prevent further flow.

Alternatively, an endotracheal tube can be inserted into the esophagus and the cuff rapidly inflated, directing the flow through the tube away from the laryngeal opening while an endotracheal tube is properly placed to protect the airway from contamination.

Precautions should also be taken to prevent accumulation of rumen gases during anesthesia. This may be done by passage of a large-bore stomach tube.

During emergence from anesthesia, it is desirable to position ruminants in sternal recumbency. When large species are restrained in recumbency, **viscera, restraining ropes,** and **bands** may restrict respiration or compress nerves or muscle groups severely. During restraint in **dorsal recumbency, abdominal viscera** may compress the large veins and restrict venous return. In all instances, thorough padding beneath the animal is mandatory.