

Anesthesia in Dogs

Dog owners are often very anxious about veterinary procedures that involve anesthesia. This handout was written to alleviate some of these concerns.

Anesthesia comes from the Greek meaning “lack of sensation”. Anesthesia is accomplished by administering drugs that depress nerve function. With general anesthesia, the patient is made unconscious for a short period of time. During this unconscious state there is muscular relaxation and a complete loss of mental pain sensation.



Other types of anesthesia include local anesthesia such as numbing an area of skin or a tooth, and spinal anesthesia, such as an epidural block, that results in anesthesia of a particular part of the body.

What are the risks of anesthesia?

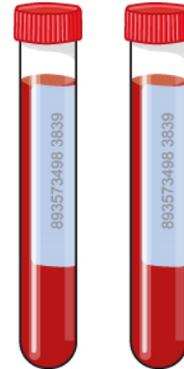
Grace Animal Hospital is the only veterinary hospital in the Midlands that utilizes an anesthetic ventilator (we actually have two!). This advanced piece of anesthetic equipment allows us to breathe for your pet when under anesthesia and eliminates the respiratory and circulatory depression that occurs with anesthesia. There is always risk of an adverse reaction when we use any anesthetic agent, no matter whether it is for a minor, short-term sedation or for a complete general anesthesia lasting several hours. It is estimated that approximately 1 in 100,000 animals will have some sort of reaction to an anesthetic agent. These reactions may range from mild swelling at the site of injection or a mild decrease in cardiac output, to an episode of anaphylactic shock or death. However, these risks and statistics are similar for human patients, and many experts put the risk of anesthetic death as less than the risk of driving to and from the hospital to have the anesthetic procedure.

Other rare complications of anesthesia include organ system failure such as kidney liver or heart failure, visual impairment, clotting disorders and seizures. We take every precaution to minimize these risks during your pet's anesthesia. Only when the benefits outweigh the risks will we perform anesthesia on your pet.

Are there things that can be done to minimize the risks?

Preoperative blood tests can be used to screen for sub-clinical problems. Certain medical conditions will increase the risk of having an anesthetic complication. These conditions include liver or kidney disease, diabetes mellitus, anemia, dehydration, and certain infectious diseases such as heartworm disease. Blood tests will increase the chance of detecting a hidden problem that could prove to be life threatening. In older animals, chest radiographs may be recommended to ensure that there is no pre-existing pathology in the heart or lungs that might increase the risk of an adverse reaction.

Immediate vascular access for emergency drug administration is one of the most important factors in the successful treatment of cardiovascular or respiratory failure in either the awake or the anesthetized patient. By placing an intravenous (IV) catheter and line before anesthesia, your veterinarian can ensure that this lifeline is already in place, should the need arise. Anesthetics, fluids and emergency drugs can be administered through the IV line. Intravenous fluids help maintain blood pressure in the anesthetized patient and will replace lost fluids (during surgery, fluids are lost through evaporation from body cavity surfaces, through bleeding, and in any tissues that are being removed). Upon completion of the procedure, intravenous fluid therapy speeds the recovery process by diluting the anesthetic agents circulating in the blood stream and by enhancing their metabolism and elimination through the liver and kidneys.



You should ensure that the pet's complete medical history is available to our veterinarians, especially if your pet has been seen at another veterinary clinic. Important information our veterinarians should know before anesthetizing your dog includes the vaccine status of the pet, the results of any previous diagnostic tests, any pre-existing medical conditions, any known drug reactions, any medications or supplements that have been given in the past few weeks, the pet's reproductive status (i.e. whether it has recently experienced an estrus or heat cycle), and whether any surgical procedures have been performed in the past.

Why do I have to sign an anesthetic consent form?

It is important that you fully understand what will happen to your pet, and that you acknowledge that the risks have been explained to you. Usually, the form will also include consent to perform surgery or other specified diagnostic testing, and will provide an estimate of the expected costs of the procedures.

Can you describe a typical anesthesia?

All anesthesia patients are weighed on admission and then undergo a thorough pre-anesthetic examination, which includes an examination of the chest, palpation of the abdomen, and assessment of the gums (checking for hydration status and evidence of good circulatory status). The medical history will be reviewed, and additional diagnostics such as blood or urine testing, electrocardiogram (EKG) or x-rays of the chest or abdomen may be performed prior to administration of any anesthetic drugs.

In the great majority of cases, a technique called 'balanced anesthesia' is used at Grace Animal Hospital. With balanced anesthesia, a combination of sedatives and anesthetic agents that is best suited to the individual patient's needs is administered. The most common combination is a pre-anesthetic sedative and analgesic combination that is

administered by injection, followed by an induction agent that is also administered by injection, and maintenance of the anesthetized state with an anesthetic gas mixed with oxygen. In order to ensure accurate delivery of the gas anesthetic, a breathing tube, called an endotracheal tube, is inserted into the windpipe or trachea. In addition to delivering the gas to the lungs, the endotracheal tube seals off the airway so that fluids cannot be accidentally aspirated while the patient is unconscious and unable to swallow.

How do you monitor an anesthetized dog?

Grace Animal Hospital utilizes multi-paramater monitors similar to those used by anesthesiologists in human surgical centers. Below is a list of common veterinary anesthesia monitoring equipment and personnel:

The Surgery Assistant is the most important monitor during an anesthetic procedure. Our assistants are professionally trained to observe and monitor the patient throughout the entire procedure, from induction until recovery. The assistant adjusts the anesthetic levels according to the patient's vital signs and ensures that the patient remains stable throughout the procedure.

Pulse Oximetry is used to monitor the amount of oxygen in the patient's blood and the pulse rate. This instrument should always be used in conjunction with other pieces of monitoring equipment.

Electrocardiogram (ECG or EKG) is used to observe the pattern of the heartbeat. It is very important to detect abnormal heartbeats called *arrhythmias*. If abnormal heartbeats are observed, appropriate changes in anesthesia and/or emergency medications can be administered.

Blood Pressure Monitors generally measure the systolic (when the heart contracts or pumps) and the diastolic (when the heart relaxes or refills) blood pressure. Coupled with other monitoring equipment, this gives detailed information on the cardiovascular status of the patient.

Capnography and **Respirometer** measures the amount of carbon dioxide produced and the number of breaths per minute. Measuring carbon dioxide and controlling breathing with an anesthetic ventilator is the best method of ensuring proper breathing during anesthesia.

Body Temperature is monitored, especially during a prolonged surgery, by inserting a probe into the esophagus ('food tube') or rectum. Low or high body temperature can cause dangerous complications. Maintenance of normal body temperature is especially important in small, young patients.

Heart Rate Monitor measures the number of heartbeats per minute. This is important to monitor so that increases or decreases can be detected early and anesthetic adjustments made quickly, resulting in smoother anesthesia for our patients.

How long will it take for my dog to recover from anesthesia?

With today's anesthetics, many of which are reversible, your pet should be almost completely normal by the time of discharge. Many pets are sleepy or tired for twelve to

twenty-four hours after anesthesia. If your pet appears to be unusually sluggish or you can't arouse him easily, contact our staff for further instructions.