

Health Care Focus

# Anesthesia

*Specially prepared for:*



Pebble Creek • Temple Terrace • North Bay • All Creatures • Cheval • Cat Doctors

**W**e understand that anesthesia is a concern for many pet owners. We are an AAHA (American Animal Hospital Association) accredited hospital which means we uphold the highest standard of veterinary care. We are evaluated by the association regularly to ensure adherence to these higher standards of practice. Only 13% of veterinary hospitals are AAHA accredited. An important aspect of this care includes anesthetic administration and monitoring. Prior to any anesthetic procedure, we ensure that your pet is healthy enough to undergo anesthesia. This starts with a physical examination to check the heart and lungs and overall general health. Next, we perform bloodwork to screen for internal organ disease that may not be detectable with physical examination. The bloodwork includes parameters that evaluate kidney and liver health as well as health of red and white blood cells, among other factors. If any abnormalities are found that could indicate additional risk during anesthesia in your pet, then additional testing or care may be needed before the procedure should be performed. If it is determined that the risk is too high, the anesthetic procedure may not be advised and the treatment plan changed.



A pet's age is not the only factor that determines safety for anesthesia. There are older pets who are overall healthy and still need the benefits of an anesthetic procedure to keep them healthy for as long as possible or to regain a healthy state. If physical examination and bloodwork findings are overall normal on an older pet, then an anesthetic procedure carries low risk. In some cases, a pet may be at higher risk for anesthesia but requires a surgical procedure for survival. Only when the benefits outweigh the risks will anesthesia be advised for an individual pet.

Even with an apparently perfectly healthy animal there is always some risk with use of anesthesia. We acknowledge and address these risks with every anesthetic procedure. It is estimated that 1 in 100,000 animals will have some sort of reaction to an anesthetic agent. Even though these odds are low, we do everything possible to prevent or quickly address even that single one. We do this through use of vigilant and advanced monitoring techniques as well as with pre-surgical, surgical, and post-surgical preventative and support measures.

### **Pre-surgical measures include the following:**

#### **1. Fasting prior to surgery -**

You will be instructed to withhold food after midnight the night before surgery with no food before surgery. This is done to prevent a potential anesthetic complication called aspiration. Aspiration occurs when a pet vomits food or fluid from the stomach and it is drawn down into the trachea and the lungs during the normal act of breathing. Aspiration ultimately can lead to pneumonia. The risk of aspiration following vomiting is much higher when under anesthesia because the normal swallowing reflexes that prevent entry into the trachea and lungs are delayed.

#### **2. Intravenous (IV) catheter -**

Intravenous means "into the vein". An intravenous catheter is a type of port that is placed into a vein, generally on a front arm, that allows access to the vascular system. Access to the vascular system allows us to administer medications if needed in the event of an anesthetic reaction or if vital signs become abnormal and medication is needed to adjust them. Since these medications are being delivered directly to the bloodstream, their effect on the body is achieved very rapidly.

#### **3. Intravenous fluids -**

Fluids given intravenously help to maintain blood pressure in an anesthetized patient and will replace lost fluids (fluids may be lost through evaporation from the body surface, through bleeding, and through any tissues being removed). IV fluid therapy also speeds up the recovery process by diluting anesthetic agents circulating in the blood stream and by enhancing their elimination through the liver and kidneys. The use of IV fluid therapy also helps to support kidney function during an anesthetic procedure.

#### **4. Antacid and Anti-emetic medications administered -**

Our patients receive an antacid medication before surgery to decrease stomach acids that can lead to reflux and resultant esophagitis (inflammation of the esophagus). We also give medication that reduces risk and magnitude of nausea and vomiting that can be related to anesthesia and may help pets return to normal eating soon after surgery.

## 5. Pre-surgical sedative and pain medication -

The administration of intravenous sedation and pain medication (sometimes referred to as “pre-medications”) before anesthesia has been shown to reduce the amount of inhalant anesthesia needed to maintain a pet through a procedure and therefore reduces their risk of an anesthetic reaction. It also improves their level of comfort when recovering from anesthesia and yields a smoother and faster recovery.

## 6. Endotracheal Intubation -

Intubation is performed at the time of anesthetic induction and involves the placement of a breathing tube into the trachea. This tube allows for delivery of oxygen to the lungs from the oxygen tank attached to the anesthetic machine and maintains an open airway during the procedure. It also serves as the method of anesthetic administration (the anesthetic is in gas form and must be breathed in by a patient throughout a procedure to maintain an unconscious state). Though patients generally maintain a normal respiration rate and oxygen level during surgery, this tube also serves a way to provide increased levels of oxygen or assistance with breathing if needed. Endotracheal tubes can also help prevent aspiration episodes, as described above, by blocking vomit from entering the trachea.

During complete duration of anesthesia all pets are thoroughly evaluated with the use of a variety of monitoring devices. Most monitoring devices are equipped with alarms that alert the technician and veterinarian if a vital sign falls out of a normal range.

## Anesthetic and patient monitoring includes the following:

### 1. Surgery assistant

A member of our technician staff who is professionally trained in anesthetic and patient monitoring is assigned to the pet throughout the entire procedure and during recovery from anesthesia. The assistant adjusts the anesthetic levels according to the patient’s vital signs, alerts the veterinarian to any concerns or abnormalities, and ensures that the patient remains stable throughout the procedure.

### 2. Electrocardiogram (EKG/ECG)

This monitoring device shows the rate and pattern/rhythm of the heartbeat. It will detect and show any abnormal heart beats called arrhythmias. If an arrhythmia is detected then the veterinarian will instruct necessary changes in anesthesia and/or administer appropriate medications to address the arrhythmia.

### 3. Heart rate monitor

This measures the number of heart beats per minute and is often done both manually by the technician monitoring the pet as well as with electronic devices. With careful monitoring, increases or decreases in heart rate can be detected early and anesthetic adjustments can be made quickly, resulting in smoother anesthesia event for our patients.

### 4. Blood pressure monitor

Blood pressure is the pressures within the heart and vessels as the heart contracts and pumps blood (systolic pressure) and relaxes and refills with blood (diastolic pressure). Blood pressure is managed through a variety of actions which include changes in anesthetic level, change in intravenous fluid rate, and/or administration of medications to adjust blood pressure to a normal range.

### 5. Respiratory monitoring

Respiratory rate is the number of breaths that a pet takes per minute. This is measured manually by the anesthetic technician and can also be measured by a device called a respirometer. Our hospital also use a device called an apnea monitor which beeps to alert the technician and veterinarian if a patient is not taking the correct number of breaths per minute. If respiratory rate is not adequate then the technician is able to provide breaths manually with oxygen through the pet’s endotracheal tube.



Effective respiration is monitored by a device called a pulse oximeter. This meter reads oxygen saturation levels in the blood to ensure that the pet is receiving enough oxygen to the bloodstream and hence to the tissues and organs during surgery. If this level becomes inadequate, measures can be taken to correct it which include decrease in the level of anesthesia and increase in level of oxygen.

End-tidal CO<sub>2</sub> (carbon dioxide) monitor is used in conjunction with a pulse oximeter. This device measures the amount of expired carbon dioxide to help determine if the patient is receiving adequate oxygen during surgery.

## 6. Core body temperature

It is important for us to help maintain a pet's normal body temperature during anesthesia as their ability to regulate it is stunted. For this reason, temperature is monitored throughout every anesthetic procedure. Patients are maintained with an external warming device and additional devices can be used if necessary.

## Post-surgical care includes the following:

### 1. Continued patient monitoring

At the termination of a patient's anesthetic procedure, the technician will turn off the anesthesia and maintain the pet on pure oxygen until they become awake enough to swallow. Once swallowing function is regained, the endotracheal tube is removed and the technician continues to monitor the pet for any post operative problems. Once the patient is fully awake they are kept comfortable in a quiet area where they can be monitored until they are ready to go home.

### 2. Home Care

Your pet should be almost completely recovered from the effects of anesthesia by the time they go home. Some pets will still be a bit tired for 12-24 hours after anesthesia however. Some pets will not be interested in food the evening of anesthesia however normal appetite should resume by the next day. If your pet appears to be excessively sluggish or cannot be aroused easily then it is important to contact the hospital immediately for specific advice.

At the time of discharge from the hospital, you will be provided with Home Care Instructions which will outline how to care for your pet in the days following the anesthetic procedure. It is important to review and follow these instructions as it will help to prevent complications following the procedure and aid in the fastest recovery and optimal outcome following any procedure.

**Please contact your veterinarian should you have any additional questions or are seeking additional information regarding your pet's anesthetic procedure. It has been a pleasure caring for your pet and we hope to continue helping you provide the care they need to live a happy, healthy, and long life!**



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