



Anesthesia Tips & Tricks *for* Veterinary Technicians

Veterinary technicians are tasked with a procedure—*anesthesia*—that is otherwise limited to human doctors, who become anesthesiologists often after obtaining their medical license and training. Veterinary technicians may learn anesthesia technique in a 2- or 4-year program or on the job. Most patients fare exceptionally well; even so, it is important to periodically review the basics.

1. Always perform a preanesthetic check

This includes checking oxygen sources, performing a leak test, and ensuring adequate amounts of inhalant anesthetic. Possible disasters include a low oxygen tank that expires, empty anesthetic, a hole in the rebreathing bag, and cracks in the nonbreathing circuit (ie, “rocky” patients under anesthesia caused by unreliable concentrations of anesthetic gas).

2. Prepare all monitoring equipment before the procedure

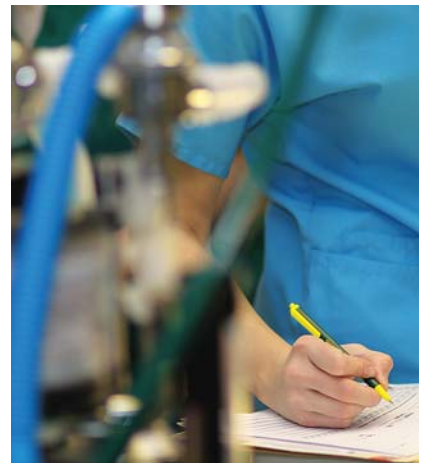
Preparing monitoring equipment and attaching it to the patient before inducing anesthesia can reveal potential problems that could occur during induction. Patients can often experience hypotension or apnea initially, and these emergencies may be missed if equipment preparation is postponed until intubation and shaving.

3. Do not be afraid to preoxygenate

Preoxygenation before intubation helps increase the functional residual capacity (FRC) in the lungs. If the patient is emergent, severely ill, pediatric, or pregnant, oxygen deprivation or ventilation during intubation can be problematic. First filling the lungs with 100% oxygen helps ensure that high oxygen concentrations can diffuse in the pulmonary system and keep the patient oxygenated.

4. Remember what your monitors are and are *not* telling you

Using just a pulse oximeter is not enough to fully know blood pressure, perfusion, anesthetic depth, ventilation, temperature, or cardiac performance. Patients are stable if their blood pressure, hemoglobin level and saturation, cardiac performance, and ventilation are sufficient, but derangements can occur. A patient could have an arrhythmia but an acceptable oxygen saturation, or a drop in blood pressure but a perfectly normal heart rate and rhythm. One monitor is not enough. The American Animal Hospital Association, Academy of Veterinary Technician Anesthetists, and American College of Veterinary Anesthesiologists recommend measuring temperature, blood pressure, and pulse oximetry; performing an ECG; and looking at physical examination parameters such as eyeball position, MM/CRT, jaw tone, and auscultation.



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For a **Preanesthetic Checklist** and a **Crash Course in ECG Monitoring**, visit veterinaryteambrief.com

Preanesthetic Checklist

- Confirm the oxygen levels are set, delivery line is leaky, and the regulator is working.
- Turn on the flow meter to ensure that the preanesthetic mixture is being delivered to the patient.
- Preanesthetic check:
 - Place a breathing circuit and monitoring by the machine.
 - Check the flow meter.
 - Place flow over the end of the breathing circuit to leak test.
 - Turn on the flow meter to the starting flow.
 - Watch the reservoir, turn off the oxygen when the reservoir approximates 20 centimeters.
 - Watch the reservoir to determine if the oxygen tank is empty.
 - When oxygen tank is low, when flow from the breathing circuit is below 20 centimeters, turn off the flow.
- Check the use of oxygen tanks in the machine.
- Check the oxygen regulator (pressure gauge) following check procedures.
- All use as performed.
- Make sure the gas is off when asleep.

Crash Course in ECG Monitoring

Pulse Oximeter: This measure the saturation level of oxygen in hemoglobin. A patient with low oxygen saturation is likely to be hypoxic. A pulse oximeter measures the amount of oxygenated hemoglobin in the blood. A pulse oximeter is used to monitor the oxygen saturation of the blood.

End-Tidal CO₂: This device measures carbon dioxide levels in the end of a closed circuit. The amount of CO₂ in the end of an expiration should be similar to the amount of CO₂ in the end of an inspiration. The amount of CO₂ in the end of an expiration should be similar to the amount of CO₂ in the end of an inspiration. The amount of CO₂ in the end of an expiration should be similar to the amount of CO₂ in the end of an inspiration.

ECG: This device measures the electrical activity of the heart. ECG signals from the heart are used to monitor the heart rate and rhythm. ECG signals are used to monitor the heart rate and rhythm. ECG signals are used to monitor the heart rate and rhythm.

Blood Pressure: This device measures the blood pressure in the arteries. Blood pressure is used to monitor the blood pressure in the arteries. Blood pressure is used to monitor the blood pressure in the arteries.


5. Use the flow meter

If a patient's anesthetic depth needs to be increased, should the inhalant concentration be turned up? Not exactly. The speed at which the patient receives the new concentration of inhalant depends on the flow meter. If the patient is breathing 2% isoflurane at 1 L/min but needs to be deeper, increase the isoflurane to 3% and the flow to 2 L/min or greater; the new anesthetic concentration will get there more quickly, as it has to travel through all the tubing. Once the desired plane is reached and the inhalant lowered, the flow rate should be reduced as well.

6. Use injectable anesthetic agents intraoperatively

This is common during a spay: a veterinarian pulls the ovary and broad ligament, the patient huffs and puffs, the inhalant is turned up, the patient settles down, and the inhalant is turned back down. The inhalant can take time to work; the technician can give additional analgesics intraoperatively to a patient that is huffing and puffing instead of using inhalant. IV anesthetics can also be used if a patient is so light that he or she is almost chewing out the ET tube.

7. Keep patients warm

Remember, body temperature regulates almost every physiologic process, so an arrhythmia or blood pressure problem will not improve until the patient is warm. Use IV fluid warmers; booties made of socks, aluminum foil, or plastic wrap; circulating-water blankets; forced-air warmers; warmed saline for lavage; and towels to cover anesthetic circuits. Be careful with warming discs, electric blankets, or microwaved IV bottles that can cause thermal burns. 

OroCAM™ (meloxicam) Transmucosal Oral Spray
Non-steroidal anti-inflammatory drug for oral use in dogs only.

Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

BRIEF SUMMARY: This summary does not include all the information needed to use OroCAM safely and effectively. See the Package Insert and Client Information Sheet for complete prescribing and other information.

For Animal Use Only
For Oral Use in Dogs Only

WARNING
Repeated use of meloxicam in cats has been associated with acute renal failure and death. Do not administer meloxicam transmucosal oral spray to cats. See Contraindications for detailed information.

Description: Meloxicam belongs to the oxicam class of non-narcotic, non-steroidal anti-inflammatory drugs (NSAID). Each milliliter of OroCAM contains 5 mg meloxicam.

Indication: OroCAM (meloxicam) Transmucosal Oral Spray is indicated for the control of pain and inflammation associated with osteoarthritis in dogs.

Dosage and Administration: Always provide the client information sheet when prescribing and dispensing OroCAM. Use the lowest effective dose for the shortest duration consistent with individual response. Due to the pump sizes, dogs weighing less than 5.5 pounds (2.5 kg) cannot be accurately dosed. OroCAM should be administered once daily at a dose of 0.1 mg/kg (0.045 mg/lb). See Bottle/Pump Assembly Instructions for Veterinarians and Administration Instructions for Owners.

Contraindications: OroCAM (meloxicam) Transmucosal Oral Spray should not be used in dogs that have a hypersensitivity to meloxicam or known intolerance to NSAIDs. Do not use OroCAM in cats.

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Human Warnings: Not for use in humans. Keep this and all medications out of reach of children. Consult a physician in case of accidental ingestion by humans or contact with mucous membranes. Direct contact with skin, eyes, and mucous membranes should be avoided. If contact occurs with skin, the area should be washed immediately with soap and water for at least 20 seconds. In case of contact with eyes, flush immediately with water. Women in late pregnancy should avoid contact with this product.

Other Precautions: The use of OroCAM (meloxicam) Transmucosal Oral Spray has not been evaluated in dogs younger than 6 months of age, dogs weighing less than 5.5 lbs (2.5 kg), dogs used for breeding, or in pregnant or lactating dogs. Meloxicam is not recommended for use in dogs with bleeding disorders, as safety has not been established in dogs with these disorders. Concurrent administration of potentially nephrotoxic drugs should be carefully approached. Please refer to the full package insert for more complete information on possible interactions and other pertinent information.

Common Side Effects: The most common adverse reactions involved the gastrointestinal system (see the Table in the package insert). Non-gastrointestinal adverse reactions were rare and included increased liver enzymes, hematuria, lethargy, polydipsia, and dehydration.

The incidence of adverse reactions observed in a clinical study is tabulated in the package insert. The pattern suggests some gastrointestinal effects (vomiting, diarrhea) are associated with OroCAM. The clinical signs were generally mild, transient (lasted 1-4 days during the 28-day study period), and resulted in complete recovery. There were no clinical signs related to the increased liver enzymes.

Effectiveness: Effectiveness was demonstrated using OroCAM in a masked, placebo-controlled, multi-site field study involving client-owned dogs. In this study, 280 dogs diagnosed with osteoarthritis were randomly administered OroCAM, or a placebo. Dogs received a daily meloxicam dose or placebo for 28 days. Effectiveness was evaluated in 258 dogs and field safety was evaluated in 280 dogs. After 28 days the treatment group showed a success rate (improvement of clinical signs) of approximately 73% and the placebo group showed a success rate of about 43%.

See full Package Insert for more details, as well as for results of safety studies.