

**VETERINARY VOICE:
Tips of the Trade**

| Critical Care- Supplemental Oxygen | |
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| Which patients need supplemental oxygen support? | <p>Any patient that has a Pao₂ < 70-80 mmHg while breathing room air will benefit from the effects of supplemental oxygen therapy.</p> <p>Pulse oximetry can be helpful in identifying hypoxic patients. SpO₂ < 90% is typically correlated with a Pao₂ < 60 mmHg. These patients usually present in respiratory distress. If the respiratory problem is chronic, patients may present with a much lower Pao₂ (50-60 mmHg) and still appear comfortable. The flow rate and duration of therapy will be based on intermittent or continuous measurement of oxygen saturation. If these measurements are not attainable in your facility, patient comfort, respiratory rate, and effort can be used to evaluate the response subjectively.</p> |
| What are some various ways to provide oxygen support to these patients? | <ol style="list-style-type: none"> 1. A tightly fitted face mask can be used for temporary and rapid delivery of oxygen. The flow rates should be at least 100ml/kg/min, but much higher (300 ml/kg/min) in a loosely fitted one. 2. Any small Plexiglas hood can be used to maintain oxygen concentrations of around 80-100% with flow rates of 1-5 L/min. These can be custom made and must include a port for oxygen administration, escape hatches for heat and carbon dioxide, and plastic film which can be adjusted to fit a particular patient size. 3. Placement of a nasal cannula is the most effective way to deliver oxygen to patients in respiratory distress. 50-70% oxygen is delivered in this manner at our hospital. Desensitize the nasal mucosa before placement of a cannula by administering 5 drops of local anesthetic (ophthalmic) into the ventral meatus. Pre-measure the tube to the medial canthus (mark it), direct it ventro-medially, and advance. To secure the tube, apply a very small amount of Krazy glue or suture it in place along the bridge of the nose extending the tube along the cranium between the eyes. Nasal cannulation can deliver oxygen flow rates of 100-200ml/kg/min (200ml/kg/min supplies ~ 60% oxygen). A 5 Fr feeding tube/ red rubber is recommended in small dogs and cats and an 8-10 Fr red rubber in larger dogs. The closed end of the tube should NOT be cut as this can lead to nasal trauma. Due to variation in anatomy, an 8 to 10 Fr cannula in brachycephalic breeds is usually suitable, but an oxygen hood may be required if unsuccessful. 4. Oxygen cages are valuable in critical dogs and especially cats (decreases stress). Oxygen cages also allow for control of temperature, humidity, and percentage of oxygen supplemented. At VSCT, most of our small dyspneic animals are supplemented with oxygen via an oxygen cage. 5. Tracheal oxygen supplementation is occasionally necessary for dyspneic animals with upper airway injury or severe facial swelling. A red rubber feeding tube can be passed through the nose down into the trachea with mild to moderate sedation. Sedation is required to visualize passage of tube through the larynx. Transtracheal oxygen supplementation can also be performed. The transtracheal catheter is made from an IV catheter (ideally a 14 ga x 5 in) with several side holes cut near the tip. The catheter may be passed through the cricothyroid membrane or the 3rd to 5th inter-ring site. An oxygen flow rate of 1-2 L/min is generally used for tracheal supplementation, and the oxygen should be humidified if possible. |
| Questions? Critical Care Experts: Stacy Armstrong, DVM, DACVECC Heather Connally, MS, DVM, DACVECC | <p>The Veterinary Specialty Center of Tucson has a board-certified criticalist caring for critical cases every day of the week. They are also available to answer questions or accept referrals 7 days a week. Board-certified criticalists have four additional years of training after veterinary school and are certified by the American College of Veterinary Emergency and Critical Care to assure competency in advanced veterinary critical care.</p> |