

# Lesson Plan

**Lesson: Anesthetic complications - ventilation**

**Timeframe: 1 hour**

**Materials needed:**

Anesthetic machine  
Capnograph  
Pulse oximeter  
Endotracheal tube  
5cc syringe

**Objectives:**

*Basic:*

1. State the normal values for ETCO<sub>2</sub>, pulse ox
2. State the range of values for hypercapnia, hypocapnia, and hypoxia
3. Know all the parts of an anesthesia machine

*Advanced:*

1. State the common ventilatory conditions that can cause hypercapnia, hypocapnia, hypoxia and how to respond to each state
2. Be able to set up an anesthetic machine and show the 5 common places for anesthetic leaks and how to fix them
3. Troubleshoot an animal that has an ETCO<sub>2</sub> of 65

**Background:**

Students should know all the parts of a gas anesthetic machine, understand the different ventilatory states and be able to trouble shoot these states.

**Introduction to Lesson:**

**Anesthesia is a vital part of the veterinary technician's job. The technician must be able to quickly troubleshoot any anesthetic complications and make quick adjustments as animals under anesthesia can quickly decompensate.**

**Procedure [Time needed, include additional steps if needed]:**

***Pre-Class Individual Space Activities and Resources:***

<b>Steps</b>	<b>Purpose</b>	<b>Estimated Time</b>	<b>Learning Objective</b>
<b>Step 1: AHS Anesthetic machine video</b>	<b>Familiarize students with parts of the anesthetic machine</b>	<b>30-45 minutes (students should video at least 2 times)</b>	<b>Know anesthetic machine</b>
<b>Step 2: Memorize normal values for ETCO2 and pulse ox</b>	<b>Know the normal values so can assess abnormal values</b>	<b>10 minutes</b>	<b>Know normal values</b>
<b>Step 3: Understand definition (and ranges) for hypercapnia, hypocapnia, hypoxia and the possible causes</b>	<b>Be able to troubleshoot conditions that can cause ventilation mismatch</b>	<b>30 minutes</b>	<b>Know abnormal values and which ventilation state the animal is likely in to cause this state</b>

<b>Step 4:</b> <b>Know common causes of hypercapnia vs. hypocapnia</b>	<b>Be able to quickly come up with differentials that the student can troubleshoot</b>	<b>30 minutes</b>	<b>Know common causes of ventilatory problems under anesthesia</b>
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***In-Class Group Space Activities and Resources:***

<b>Steps</b>	<b>Purpose</b>	<b>Estimated Time</b>	<b>Learning Objective</b>
<b>Step 1:</b> <b>Class divided into groups of 4 or 5. Each group will be given a deck of cards with all the anesthetic machine parts on it. The group must put together the order each card in order of the flow of oxygen through the machine starting from the oxygen tank. Some cards will have blank where the group must write in what the value is for that card. For instance, what is the PSI of the oxygen tank if full, what is the PSI of the regulator to flowmeter, etc.</b>	<b>Shows understanding of how any anesthetic machine works and how to trace the oxygen flow.</b>	<b>10 minutes</b>	<b>Be able to trace flow of oxygen in an anesthetic machine</b>
<b>Step 2:</b> <b>Each group will put together an anesthetic machine and perform a leak test.</b>	<b>Actually putting together an anesthetic machine</b>	<b>15 minutes</b>	<b>Be able to quickly put together an anesthesia machine and perform a leak test</b>

<p><b>Step 3:</b>  <b>Instructor will come by and create a leak in the anesthetic system. The group will work together to figure out where the leak is and fix it.</b></p>	<p><b>Be able to troubleshoot a leak in the anesthetic system</b></p>	<p><b>15</b></p>	<p><b>Be able fix problems in the anesthetic system</b></p>
<p><b>Step 4:</b>  <b>An animal has an ETCO2 of 65. Name 4 possible causes for this, including any anesthetic machine/tube defects that may cause this. Show on the machine where the malfunction may happen and how you would correct it.</b></p>	<p><b>Troubleshooting common anesthetic complications</b></p>		<p><b>15 minutes</b></p>
<p><b>Step 5:</b>  <b>Kahoot! quiz on anesthetic machine and complications</b></p>			<p><b>5 minutes</b></p>

**Closure/Evaluation:**

**Analysis:**

***Post-Class Individual Space Activities:***

***Connections to Future Lesson Plan(s):***