Troubleshooting ventilation

Act if: $\text{ETCO}_2 < 20 \text{ mmHg}$, $\text{ETCO}_2 > 60 \text{ mmHg}$ or inspired $\text{CO}_2 > 5 \text{ mmHg}$

- **Check patient**
- **Give manual breath (10–15 cmH}_2\text{O)}** and observe next reading on capnograph
- **$\text{ETCO}_2 20–60 \text{ mmHg}$ Normal under anesthesia**

**ETCO\(_2 < 20 \text{ mmHg}\)** Hyperventilation

- Artefact due to high O\(_2\) flow rate
- Check pulse and blood pressure: may indicate impending arrest

Check for:
- Leaks
- Extubation
- Esophageal intubation
- Disconnection
- Rapid respiratory rate
- Inadequate anesthetic plane
- Iatrogenic (overzealous manual or mechanical ventilation)

**ETCO\(_2 > 60 \text{ mmHg}\)** Hypoventilation

- Check for:
  - Excessive anesthetic depth
  - Obesity
  - Body positioning impairing breathing
  - Airway obstruction
  - Bronchoconstriction
  - Fluid or mass in chest
  - Pressure on chest (surgeon?)
  - Increased abdominal pressure
  - Insufflation with $\text{CO}_2$ (laparoscopy)
  - Iatrogenic (inadequate manual or mechanical ventilation)

**Inspired $\text{CO}_2 > 5 \text{ mmHg}\**

- Rebreathing $\text{CO}_2$

Check for:
- Inadequate O\(_2\) flow rate
- Excessive equipment dead space
- Exhausted $\text{CO}_2$ absorbent
- One-way valve not functioning

Troubleshoot monitor

Water vapor obstructing the CO\(_2\) line?
- Disconnect $\text{CO}_2$ adapter
- Should read ‘0’ on room air
- Breathe through the adapter = 35–45 mmHg

This algorithm is from the AAFP Feline Anesthesia Guidelines, published in JFMS in July 2018 and available at catvets.com/guidelines

Key: $\text{ETCO}_2 = \text{end-tidal carbon dioxide}$