

Discover the Clinical Secrets Right Under Your Nose

Capnography: A simple, powerful tool to enhance patient safety

As an experienced Emergency and ICU nurse, I speak with conviction when I describe patient safety as my top priority. Families enter our care for countless reasons each day. From the simplest medical procedures to life-threatening emergencies requiring sophisticated interventions, our goals in health care are universal and timeless: Safely assess and treat patients, and restore them to their highest level of function as soon as possible.

One critical requirement during this time is to detect and prevent unnecessary complications for our patients. To achieve this goal, caregivers need simple, immediate, and reliable information. Too often, capnography monitoring remains a greatly underutilized tool in health care institutions. This is most commonly due to a simple lack of coordinated implementation. For improved clinical outcomes, this must change.

In November 2016, ECRI published its Top 10 Health Technology Hazards for 2017. Number 4 on its list of priorities is Undetected Opioid-Induced Respiratory Depression:

“ECRI Institute recommends that healthcare facilities implement measures to continuously monitor the adequacy of ventilation of these patients and has recently tested and rated monitoring devices for this application.”¹



Capnography offers immediate and accurate clues to ventilation status and responses to interventions.

Recommended by the American College of Emergency Physicians, American Society of Anesthesia, American Heart Association, and The Joint Commission, capnography offers immediate and accurate clues to the overall ventilation status of patients of all ages, as well as global trends and responses to interventions. It offers assessment within seconds in a comfortable, noninvasive method for both spontaneously breathing and mechanically ventilated patients. It works for all age groups, and is helpful in more situations than you might think. Here's a review to get you up to speed on just how much this technology can help you and your patients.



Classic Capnography Superpowers

Common uses in all age groups, for all conditions

- **Easy in, Easy Out**

Determine rate and adequacy of ventilation:

- Status and Trending: Ventilator management and weaning.
- Procedural Sedation: Vigilance for respiratory depression.
- Opioid Administration: Especially OSA and respiratory distress.
- Seizing/Obtunded Patients: Assess ventilation despite irregular breathing patterns.
- V/Q Mismatch: Identify widening values between PaCO₂ and P_{ET}CO₂.

- **Where It's At**

Verify ETT placement. Avoid unrecognized accidental extubations in transport.

- **Do It Right**

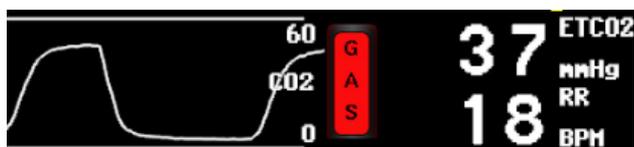
Gauge effectiveness of resuscitation efforts during cardiac arrest.

- **It's Baaaacckkk**

Indicate Return of Spontaneous Circulation (ROSC) during chest compressions.

- **Tough Decisions**

Determine prognosis in CPR resuscitation (higher EtCO₂=better cardiac output; <10mmHg after 20 minutes of CPR indicates extremely poor survival prognosis).²



Powerful Newer Applications

More recent implementations across all patient types

- **Do No Harm**

- Avoid overventilation. Ventilate to maintain normal EtCO₂ levels, even with TBI.
- Hyperventilation raises intrathoracic pressure, drops venous return, and reduces cardiac output.³ Maintain cerebral perfusion pressure and optimal oxygenation to the body and the brain; avoid secondary injury from lifesaving actions.

- **Act Earlier with Confidence**

Sepsis Protocol Support:

- Low EtCO₂ (<25mmHg) levels correlate with elevated lactate levels >4mM/L and predict mortality in sepsis.⁴
- Assess volume responsiveness with a Passive Leg Raise Maneuver while monitoring EtCO₂
- Accurate respiratory rate measurement is critical for quickSOFA scores.

- **I'm All About that Base**

- Tachypnea plus low EtCO₂ can suggest acidosis. Check EtCO₂ for immediate indication of metabolic acidosis (DKA, gastroenteritis, dehydration).⁵

- **Follow the Trends**

- Be assured that your patient is headed in the right direction. EtCO₂ shows patient status visually. Recognize decompensation and improvements by tracking the CO₂ trends. Act earlier to avoid complications and recognize improvements.

For more in-depth education and detailed references on this information, contact your Spacelabs representative for Spacelabs Publication 030-0500-00.

References:

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