

AIRWAY – END TIDAL CO₂ DETECTION

1. Level: EMT, AEMT, Paramedic, RN
2. Purpose: Electronic ETCO₂ is used to confirm/monitor ET tube placement and monitor the patient's respiratory status by measuring exhaled CO₂ values during EMS treatment. Electronic ETCO₂ monitoring is a mandatory method for tube confirmation in the Adult Airway Confirm-Reconfirm protocol. Since the percentage of CO₂ in exhaled air is approximately equal to the concentration of CO₂ in the blood it is a very accurate representation of the actual effectiveness of ventilation. CO₂ changes will alert the medic quicker than SpO₂ changes in the event the ET becomes displaced and effectiveness of treatment.
3. Indications:
 - 3.1. Mandatory component of the **ADVANCED AIRWAY CONFIRMATION / MANAGEMENT Protocol**
 - 3.2. Must be used on all ventilator transports
 - 3.3. Cardiac arrest
 - 3.4. Any sedation administration, including Ketamine, Droperidol, Lorazepam, Etomidate, and Midazolam
 - 3.5. Any Fentanyl administration
 - 3.6. May be helpful in differentiating the cause of respiratory distress and to evaluate the effectiveness of treatment.
 - 3.7. May be useful in DKA and sepsis patients
4. Precautions: None
5. Procedure:
 - 5.1. Normal PaCO₂ is between 35 and 45 mm/Hg. The ETCO₂ monitor displays a percentage of CO₂ as a number as soon as an inline detector or sampling cannula is applied.
 - 5.2. Intubated patients
 - 5.2.1. Prior to intubation, insert the CO₂ filter line into the port of the cardiac monitor. Secure the fitting into the port by turning it clockwise until it is snug. After the ET is placed into the patient's airway, attach the filter line to the ET tube and ventilate the patient. A quantitative measurement of CO₂ and the presence of a waveform on the cardiac monitor display is verification of proper tube placement.
 - 5.2.2. A rise in CO₂ readings with CPR can be correlated to the effectiveness of CPR.
 - 5.2.3. A significant rise in CO₂ may be the first indication of return of spontaneous circulation.
 - 5.2.4. Head trauma patients should be ventilated to an ETCO₂ reading of 35-40 mm Hg.
 - 5.2.5. Upon arrival at the ED, notify the physician of the ETCO₂ reading and ventilatory pattern on the monitor.
 - 5.3. Non-Intubated patients
 - 5.3.1. A high reading in a spontaneously breathing patient may indicate a state of hypoventilation (one of the indications for intubation is a risk of failure of ventilation).
 - 5.3.2. A low reading in a spontaneously breathing patient, when hypoperfusion is not suspected, may be an indication of hyperventilation.