End-Tidal Carbon Dioxide Monitoring (Capnometry and Capnography)

Aliases: ETCO2, End Tidal, Capnography

Definitions: For the purpose of all protocols the mention End Tidal Carbon Dioxide monitoring, these are the definitions:

1. Capnography is a graphic representation of exhaled carbon dioxide displayed as a waveform along with a numeric (quantitative) representation.
    a. Capnography is mandatory for endotracheal tube airway confirmation.
    b. Capnography via nasal cannula is mandatory during certain medication administrations per applicable protocol as it is also a valuable assessment tool in critically ill patients.

MCA approval to utilize capnography.

☑ EMT

MCAs will be responsible for maintaining a roster of BLS agencies choosing to participate and will submit roster to MDHHS

2. Capnometry is a numeric representation of exhaled carbon dioxide.
    a. A colorimetric (qualitative) end tidal carbon dioxide monitor is a rudimentary form of capnometry and is acceptable for use in MFR and BLS applications.
    b. Capnometry that includes a numerical (quantitative) read out is preferred to colorimetric capnometry.

Indications:

1. Determining appropriate placement of an airway has taken place.
    A. Capnography **must** be utilized to confirm endotracheal tube placement.
    B. Capnography or Capnometry **must** be utilized on all supraglottic airways per licensure level requirements.

2. Continuous monitoring of the integrity of the ventilatory circuit.
    A. Capnography **may** be utilized in patients receiving assisted ventilations without advanced airways (used between the face mask and the bag-valve).
    B. Capnography **must** be used for patients on transport ventilators.

3. Monitoring severity of pulmonary disease (bronchospasm) and evaluating response to therapy
    A. Capnography **may** be utilized in patients with respiratory distress, or with signs and symptoms suggestive of acidosis.

4. Monitoring therapy intended to increase coronary blood flow, reflected in CO_2 elimination

A. Capnography **may** be utilized in patients receiving CPR (even without advanced airway placement), cardiac pacing, or when receiving medications that are intended to increase cardiac output, as a means to determine the physiological effectiveness of interventions
B. Capnography **must** be utilized for critically ill patients and for patients with ROSC in ALS/LALS units.

Contraindications:

1. There are no absolute contraindications to Capnography/Capnometry

Procedure:

1. Attach the colorimetric device to airway device (supraglottic or between facemask and BVM)
2. Note presence or absence of color change.
    a. If no change in color on device, verify placement of device.
3. Document findings in patient chart.
4. When ALS arrives, switch to capnography (if available) from capnometry.
5. Attach the CO_2 sensor to the monitoring device and to the advanced airway, or between the mask and the bag valve in the ventilated patient that does not have an advanced airway placed or using the nasal cannula style sensor for patients not receiving assisted ventilation.
6. Note the CO_2 level and waveform characteristics
7. Any loss of CO_2 detection or waveform may indicate an airway or ventilation problem and should be investigated, corrected and documented.
8. Document the use and results in the Patient Care Record (PCR).

Note: If a **"0"** value, no value, or no color change is noted for a patient:

- Ensure that the patient has adequate spontaneous circulation and ventilation, or that effective CPR is being performed
- Verify that the tubing is properly connected to the monitor and that there are no kinks in the tubing.
- If the tubing is found not to be the problem and an advanced airway has been placed, remove the advanced airway immediately and assist ventilations as needed with manual ventilation techniques.