

Subject: Scope of Practice/Procedure - ALS  
**End Tidal CO<sub>2</sub> Detection**

Associated Policies:

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- I. Indications
  - A. All patients who have been orally or nasally intubated.
  
- II. Therapeutic Effect
  - A. Measures presence of CO<sub>2</sub> in the airway.
  
- III. Contraindications
  - A. Absolute:
    1. None.
  - B. Relative:
    1. End tidal CO<sub>2</sub> detectors may report unreliable results (no CO<sub>2</sub> detected) in patients without a pulse due to low perfusion state, inadequate CPR, or on a nonviable patient.
  
- IV. Equipment
  - A. End tidal CO<sub>2</sub> detector.
  
- V. Procedure
  - A. Inspect CO<sub>2</sub> detector for:
    1. purple color.
    2. dryness.
  - B. Suction any fluid that is present in the endotracheal tube.
  - C. Remove end caps from both ends of the CO<sub>2</sub> detector (if present).
  - D. Attach CO<sub>2</sub> detector to bag-valve device.
  - E. Connect the bag-valve device with the CO<sub>2</sub> detector attached to the endotracheal tube, keeping CO<sub>2</sub> detector clean and dry.
  - F. Begin ventilations, use proper ventilation rate for infant, child or adult, observing for bilateral rise and fall of the chest.
  - G. Assess tube placement by auscultating/observing for:
    1. absence of bubbling, gurgling noise in epigastric area – two (2) breaths.
    2. lung sounds bilaterally – two (2) breaths, each side.
  - H. Observe CO<sub>2</sub> detector for color change during exhalation - after a total of six (6) breaths.
  - I. Initiate corrective measures as needed:
    1. Patient with a pulse.
      - a. Yellow, leave in place.
      - b. Tan, re-evaluate:
        - 1) Check possible causes of low perfusion such as inadequate ventilation, hypovolemia, etc.

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- 2) Ventilate six (6) more times and re-assess tube placement and CO<sub>2</sub> detector for color change.
    - c. Purple, problem:
      - 1) Tube is incorrectly placed, extubate.
      - 2) Ventilate with BVM, re-intubate.
  2. Patient without a pulse:
    - a. Yellow, leave in place.
    - b. Tan, re-evaluate:
      - 1) May be due to retained CO<sub>2</sub> from BVM ventilation, alcohol, carbonated drinks, or inadequate CPR.
      - 2) Ventilate six (6) more times and re-assess tube placement and CO<sub>2</sub> detector for color change.
    - c. Purple, problem:
      - 1) Visualize vocal cords.
        - a) If tube is placed below the vocal cords, leave in place, and check adequacy of CPR.
        - b) If tube is incorrectly placed, extubate, ventilate with BVM and re-intubate.

VI. Special information

- A. CO<sub>2</sub> detectors are only an adjunct to careful patient assessment.
- B. CO<sub>2</sub> detectors should not be used as the sole means of assessing correct ET tube placement.
- C. CO<sub>2</sub> detector must be kept clean and dry.
- D. If CO<sub>2</sub> detector color is not purple on removal from packet, CO<sub>2</sub> detector should be discarded.
- E. Fluid in CO<sub>2</sub> detector inactivates detector; if wet, CO<sub>2</sub> detector will appear mottled. CO<sub>2</sub> detector is then no longer usable and should be discarded.
- F. CO<sub>2</sub> detector becomes inactivated when used over a long period of time. Two (2) hours for adults.

Approved: 

Approved as to Form: 