

## A. Introduction

The capnographer measures expired carbon dioxide as expressed as end-tidal CO<sub>2</sub> (ETCO<sub>2</sub>). Capnography will be used to assist in verifying that an advanced airway has been correctly placed and maintained.

## B. Indications for Use

1. To confirm initial tube placement in all intubated patients.
2. For continuous monitoring of tube placement throughout patient care and transport.
3. To identify the proper ETCO<sub>2</sub> values when providing treatment to patients exhibiting signs of brainstem herniation [Protocol 36](#) [Protocol 21](#)
4. To confirm the placement of an endotracheal tube upon release of a patient at the Emergency Department or other transport unit.

## C. Normal Values

NOTE: The capnographer will require approximately six breaths to display a change of ETCO<sub>2</sub>.

1. The following guidelines will be used for patients with a pulse and/or blood pressure:
  - a) 35-45mmHg Normal ETCO<sub>2</sub> values.
  - b) 46-50mmHg Mild hypercarbia.
  - c) >50mmHg Severe hypercarbia.
  - d) 35 - 40mmHg Maintain for increased intracranial pressure management (ICP).
2. A return of spontaneous circulation (ROSC) will be indicated during resuscitation following a rhythm change and a corresponding increase of >20 mmHg ETCO<sub>2</sub> value.

## D. Procedure

### ALS

1. Attach ETCO<sub>2</sub> Filter Tubing to LP12/LP15. Be sure the port is clear before insertion.
2. Reading will be displayed in LP12/LP15 display on lower left side.
3. Attach the 15 mm adapter in-line with the ventilation device and the ET tube and after six breaths, note the ETCO<sub>2</sub>.
4. As a minimum, an initial ETCO<sub>2</sub> reading upon receipt of a patient and a reading upon release of a patient must be documented on the ePCR. Additionally, once tube placement has been confirmed, select "confirm tube" in Event selection of LP12/LP15.

## **E. Precautions**

1. In a patient with spontaneous circulation, if the ETCO<sub>2</sub> value is below 15 mmHg, proper ET tube placement must be verified by other means [Procedure 03](#), preferably direct visualization.
2. Decreasing ETCO<sub>2</sub> values during CPR may indicate:
  - a) An excessive ventilation rate (hyperventilation)
  - b) Poor CPR
  - c) Circulation of high-dose Epinephrine (causing profound vasoconstriction)
3. If CO<sub>2</sub> filter-line purging message appears on LP12/LP15 screen, the ETCO<sub>2</sub> Filter Tubing can be twisted, kinked or clogged with fluid. Check for kinks and if unresolved, disconnect the ETCO<sub>2</sub> Filter Tubing from the LP12/LP15 and reconnect. If needed, change ETCO<sub>2</sub> Filter Tubing.

**Caution:** When delivering medications via ET tube, make certain six positive pressure ventilations follow medication administration to avoid clogging of the ETCO<sub>2</sub> Filter Tubing and loss of ETCO<sub>2</sub> readings.

## **F. Maintenance**

1. For repairs and replacement, contact an EMS Field Supervisor.