

CAPNOGRAPHY

OVERVIEW:

Capnography provides a tool to measure the effectiveness of ventilations. Waveform capnography is the measurement of the carbon dioxide released by a patient during respiration, displayed as a waveform to allow interpretation of specific pathologies. ETCO₂ (End Tidal Carbon Dioxide) is a measurement of the peak amount of CO₂ expired during a single breath. ETCO₂ can provide information about the patient's ventilatory status and may be used by all provider levels.

INDICATIONS:

- ❑ Patients with respiratory complaints
- ❑ Every intubated patient
- ❑ Patients who may benefit from monitoring (e.g., altered mental status)

CONTRAINDICATIONS:

- ❑ None noted

PROCEDURE:

- ❑ Manage airway according to appropriate protocol
- ❑ Apply ETCO₂ monitor
- ❑ Maintain ETCO₂ output between 35-40 mmHg unless patient has clinical presentations that indicate a head injury
- ❑ The following approximates the degree of ventilation:
 - 40 mmHg = Hypoventilation
 - 35 – 40 mmHg = Normal ventilation
 - 30 – 35 mmHg = Hyperventilation
 - < 30 mmHg = Aggressive hyperventilation should be avoided in all patients
- ❑ Hyperventilation in the field is indicated only when patient is seizing or shows signs of brain stem herniation after correcting hypotension or hypoxemia.
 - Signs of brain stem herniation include:
 - Pupillary abnormalities
 - Neurologic posturing
 - Cushings reflex
- ❑ See “Head Trauma” Protocol

CONSIDERATIONS:

- ❑ *Normal Ventilation*

<i>ADULT</i>	<i>PEDIATRIC</i>
▪ 12 breaths/minute	▪ 20 breaths/minute (children) ▪ 25 breaths/minute (infants)
▪ 35-40 mmHg ETCO ₂ reading	

- ❑ *Hyperventilation*

<i>ADULT</i>	<i>PEDIATRIC</i>
▪ 20 breaths/minute	▪ 25 breaths/minute (children) ▪ 35 breaths/minute (infants)
▪ 30-35 mmHg ETCO ₂ reading	