

## SAEMS PRE-HOSPITAL PROTOCOLS

### CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) PROTOCOL

#### I. INTRODUCTION

Continuous Positive Airway Pressure (CPAP) rapidly improves gas exchange, respiratory mechanics, and the sense of dyspnea. It may reduce the need for endotracheal intubation in patients with respiratory distress related to asthma, COPD, pulmonary edema, heart failure, near drowning, and pneumonia.

#### II. INDICATIONS

Patients with moderate to severe respiratory distress secondary to:

- Asthma/reactive airway disease
- COPD
- Heart failure
- Acute pulmonary edema
- Hypoxia and shortness of breath in other non-traumatic settings

**and** one or more of the following:

- Pulse Oximetry < 90% not improving with standard therapy
- Accessory muscle use/retractions
- Respiratory rate > 26
- Signs of fatigue/respiratory failure

#### III. CONTRAINDICATIONS

- Pneumothorax
- Depressed level of consciousness
- Trauma (including traumatic brain injury)
- Persistent vomiting
- Recent gastric surgery
- Facial abnormalities/trauma
- Systolic BP < 90 mm Hg not due to heart failure and unresponsive to fluid bolus

#### IV. PROCEDURE

- A. Implement treatment protocols/standing orders for underlying condition as appropriate. Administration of bronchodilators should take priority over use of CPAP in asthmatic patients; if the CPAP device allows inline bronchodilator therapy both should be initiated if indicated.
- B. Explain procedure to patient.
- C. Place patient in seated position.
- D. Connect device to 100% oxygen.
- E. **Do not exceed 10 cm H<sub>2</sub>O PEEP when adjusting flow rates.** The flow rates that produce specific PEEP settings vary widely among devices produced by various manufacturers.
- F. Follow other specific manufacturer instructions as necessary.
- G. Hold the delivery device loosely over the mouth and nose.
- H. Secure the mask, gradually adjust straps as tolerated and monitor for leaks.
- I. Instruct the patient to inhale through the nose and exhale through the mouth.

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- J. Begin with 5 cm H<sub>2</sub>O PEEP. If needed, gradually increase the pressure to a maximum of 10 cm H<sub>2</sub>O. Check the following to ensure adequate O<sub>2</sub> flow:
  - 1. The CPAP valve remains slightly open during the entire respiratory cycle
  - 2. The anti-asphyxia valve on the mask should not open
  - 3. Some air should escape from the exhalation port during inspiration
- K. Decrease or discontinue PEEP for systolic BP < 90 mm Hg.
- L. Avoid interruption of therapy.
- M. Assess for the following signs of deterioration and/or complications:
  - Declining mental status
  - Increasing ETCO<sub>2</sub>
  - Declining SpO<sub>2</sub>
  - Progressive fatigue
  - Pneumothorax
  - Hypotension
  - Gastric distention and vomiting
- N. If respiratory status deteriorates, the device does not fit, or the device cannot be tolerated, remove device and consider bag valve mask ventilation or intubation.
- O. Notify receiving facility of CPAP application.

### V. SPECIAL CONSIDERATIONS

- A. Success is highly dependent upon patient tolerance. Never use restraints to facilitate this procedure.
- B. Consider the administration of an anti-anxiety agent with caution, due to possible further respiratory depression.
- C. CPAP may be used in patients with prehospital advanced directives or DNR orders.
- D. For planned, prolonged transports, ensure adequate O<sub>2</sub> supply prior to initiation of transport.