

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

Continuous Positive Airway Pressure has been shown to rapidly improve vital signs, gas exchange, the work of breathing, decrease the sense of dyspnea, and decrease the need for endotracheal intubation in the patients who suffer from shortness of breath from congestive heart failure and acute cardiogenic pulmonary edema. CPAP is also shown to improve dyspnea associated with pneumonia, chronic obstructive pulmonary disease (asthma, bronchitis, emphysema). In patients with CHF, CPAP improves hemodynamics by reducing preload and afterload.

Indications:

Dyspnea / Hypoxemia secondary to congestive heart failure, acute cardiogenic pulmonary edema, pneumonia, chronic obstructive pulmonary disease (asthma, bronchitis, emphysema) and:

- A. Any patient who is complaining of shortness of breath for reasons other than pneumothorax or chest trauma
- B. Is awake and oriented
- C. Has the ability to maintain an open airway (GCS>10)
- D. Has a respiratory rate greater than 25 breaths per minute
- E. Has a systolic blood pressure above 90 mmHg
- F. Uses accessory muscles during respirations

Contraindications:

- 1. Pneumothorax
- 2. Respiratory arrest
- 3. Agonal respirations
- 4. Unconscious
- 5. Shock associated with cardiac insufficiency
- 6. Penetrating chest trauma
- 7. Persistent nausea/vomiting
- 8. Facial anomalies / stroke obtundation / facial trauma
- 9. Has active upper GI bleeding or history of recent gastric surgery

Procedure:

- 1. Assess patient for signs / symptoms of pneumothorax
- 2. Place patient in a sitting position
- 3. Assess vital signs and SpO₂ frequently
- 4. EMT-I and Paramedic: Attach ECG monitor
- 5. If BP <90 systolic contact Medical Control prior to beginning CPAP
- 6. Begin at lowest level of positive pressure available

7. Explain the procedure to the patient:
 - i. Patient requires reassurance to be used effectively.
 - a. Example: "You are going to feel some pressure from the mask but this will help you breath easier."
 - ii. Place delivery device over mouth and nose.
 - iii. Instruct patient to breath in through their nose slowly and exhale through their mouth as long as possible (count slowly and aloud to four then instruct to inhale slowly).
8. For CHF/Pulmonary Edema, titrate to 10cm/H₂O. For all other SOB, titrate to 5cm/H₂O
9. Check for air leaks
10. Treatment should be given continuously throughout transport to ED.
11. Continue to coach patient to keep mask in place and readjust as needed
12. If respiratory status / level of consciousness deteriorate, remove device and begin bag valve mask ventilation.
13. Documentation on the patient care record should include:
 - a. CPAP level
 - b. Frequent SpO₂ and Vital Sign assessment
 - c. Response to treatment
 - d. Any adverse reactions

Special Notes:

1. CPAP should not be used in children under 12 years of age
2. Advise receiving hospital as soon as possible so they can prepare for the patient's arrival
3. Do not remove CPAP until transfer of care has taken place at receiving hospital
4. Continuous reassessment of patient airway

RESPIRATORY DISTRESS SPONTANEOUS BREATHING

