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 breathe 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

- Open airway, provide oxygen NRBM / BVM
- Assess SpO2 and lung sounds
- Obtain history and medications

If Clear Lung Sounds, Treat Cause - Transport

- Decreased Lung Sounds with Wheezing
  - Anaphylaxis
    - Assist with Auto-Injector Epinephrine
      - Insect Bite/Sting Epinephrine 1:1000 0.3mg Sub Q
    - Other Allergens Contact Medical Control
  - Asthma / COPD
    - Consider CPAP (See Protocol)
      - Albuterol Aerosol 2.5mg (3cc) O2 at 8LPM
    - Consider CPAP (See Protocol)

- Unequal Lung Sounds
  - Crackles CHF / Pulmonary Edema
    - Nitroglycerin 0.4mg SL Q5min x3 Maintain SBP Above 100
  - Consider CPAP (See Protocol)
    - Furosemide 20-40mg
    - Morphine 2-5mg IV
  - Epinephrine or Glucagon

- Pt. Hypotensive Epinephrine 1:10,000 0.5mg IV
  - If Hypertensive, CAD, CVA, Pregnant: Consider Glucagon 1mg IM/IV versus Epinephrine

- Consider Diphenhydramine 25-50mg IM/IV

- Consider Albuterol Aerosol If Wheezing Present

- ~IV NS, KVO ~ECG Monitor ~Re-assess Lung Sounds

Tension Pneumothorax
- Chest Decompression

Determine and Treat Cause

Maintain SBP Above 100