

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

FOR USE ONLY IF SPECIFICALLY INCLUDED WITHIN THE APPROVED SCOPE OF PRACTICE OF THE PROVIDER

Continuous Positive Airway Pressure (CPAP) has been shown to rapidly improve vital signs, gas exchange, work of breathing, decrease the sense of dyspnea, and decrease the need for endotracheal intubation in certain patients who suffer respiratory distress from CHF, pulmonary edema, asthma, COPD, or pneumonia. In patients with CHF, CPAP can improve hemodynamics by reducing preload and afterload, however it may cause hypotension.

- A. INDICATIONS: Any patient who is in respiratory distress and who has signs and symptoms consistent **with at least one of the following**: CHF, pulmonary edema, asthma, COPD, or pneumonia **AND must meet all five (5) of the following criteria**:
1. Is awake and oriented.
 - a. Exception to this would be if you had the optional ability to continuously monitor and trend ETCO₂ values and waveform and **MUST** remain with the patient at all times.
 - b. If the patient has an altered LOC caused from hypercapnia then CPAP may be applied and patient continually reassessed for a decrease in the ETCO₂ and improvement in oxygenation as evidenced by an increase in the SPO₂, level of consciousness and decrease in the ETCO₂.
 - c. If after 3 to 5 minutes the patient does not respond or their condition worsens then the CPAP will be disconnected and patient will receive PPV or BVM and consider intubation to protect the airway. Refer to protocol 5901 (Airway Management)
 2. Is over 12 years old and is able to fit the CPAP mask.
 3. Has the ability to maintain an open airway (GCS >10).
 4. Has a systolic blood pressure > 90 mm Hg.
 5. Has **at least two (2)** or more of the following:
 - a. Retractions or accessory muscle use.
 - b. Respiratory > 24 per minute.

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c. Inability to speak in full sentences due to dyspnea.

B. CONTRAINDICATIONS (Do not use if any are present):

1. Respiratory arrest.
2. Hypotension (Blood pressure < 90 systolic).
3. Suspected pneumothorax.
4. Patient has a tracheostomy.
5. Foreign body airway obstruction.
6. Facial deformity or trauma causing inability to achieve mask seal.
7. Actively vomiting.
8. Recent facial, neurological, or gastric surgery.
9. Chest, head, or face trauma.

C. COMPLICATIONS:

1. Tension pneumothorax
2. Hypotension
3. Aspiration
4. Gastric distention
5. Severe anxiety / combativeness due to mask intolerance.

D. PROCEDURE:

1. Explain the procedure to the patient.
2. Continuously monitor patient.
 - a. Check and document vital signs every five (5) minutes.
 - b. Observe for decrease in level of consciousness.

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- c. Observe for gastric distention.
 3. Continuously monitor pulse oximeter.
 4. Ensure adequate oxygen supply to the CPAP device.
 5. Turn CPAP device on.
 6. Have the patient sit up as much as possible.
 7. Apply the device as per manufacturer's directions.
 8. Initially assist the patient in holding the mask tightly to their face and evaluate their tolerance of the mask.
 9. Reevaluate patient's condition and tolerance of the mask:
 - a. Coach the patient to keep mask in place and readjust, as needed.
 - b. If respiratory status or level of consciousness deteriorates, remove device, assist ventilations, and utilize appropriate airway management modality as per protocol.
 - c. If patient tolerates mask and condition does not deteriorate, secure the mask with straps.
 10. Check for air leaks.
 11. Continue to monitor the patient during transport.
 12. Contact **Medical Command**, as early as possible, so the receiving hospital can be prepared for the patient.
- E. REMOVAL: CPAP should be continuous and should not be removed in the prehospital setting unless:
1. Patient cannot tolerate the mask.
 2. Patient begins to vomit.
 3. Patient's mental or respiratory status deteriorates.

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4. Patient becomes hypotensive (Systolic blood pressure < 90 or drops 20 mm/Hg).

Notes:

1. CPAP should continue upon arrival at the emergency department until patient care is transferred to the emergency department staff. Do not remove CPAP until hospital emergency therapy is ready to be placed on the patient.
2. This procedure may be performed on a patient with a *Do Not Resuscitate order*.
3. CPAP pressure should be started at 3 - 5 cm of H₂O. Most patients will only require 5 cm H₂O. Pressure may be slowly titrated upward depending on patient response, BUT NEVER ABOVE 10 cm H₂O without MCP order.
4. CPAP should be used with caution with portable oxygen systems due to limited amounts of oxygen available to operate the device (If CPAP device is oxygen powered).
5. **DO NOT** delay other emergency interventions to establish CPAP. CPAP should be delivered as an adjunct to treatments indicated by the primary protocol.
6. Most patients will improve in 5 - 10 minutes. If no improvement within this time, consider additional treatment options per primary protocol.
7. **DO NOT** force CPAP use on patients who have failed at past attempts to utilize noninvasive ventilation techniques and request that it not be applied.