SUBJECT: Procedures – BLS
Continuous Positive Airway Pressure (CPAP)

I. Authority and Reference (incorporated herein by references)
- A. Division 2.5 of Health and Safety Code
- B. California code of Regulations, Title 22
- C. North Coast EMS Policies and Procedures

II. Purpose:
To describe the use of Continuous Positive Airway Pressure (CPAP) devices in the prehospital setting.

III. Policy
- A. All providers must ensure that all their personnel have received adequate training in the use of the provider's CPAP device(s).
- B. Providers must ensure that they can carry adequate oxygen for their selected device.
- C. Providers that provide CPAP should also have Pulse Oximetry available.

IV. Indications
- A. CPAP should be considered for patients in severe respiratory distress. Signs of severe distress may include:
    1. Accessory muscle use/retractions;
    2. Oxygen saturation < 92%;
    3. Respiratory rate > 24;
    4. Unable to speak in full sentences;
    5. Abdominal/paradoxical breathing; or
    6. Altered mental status

V. Contraindications:
- A. Absolute:
    1. Obvious need for assisted ventilations. Irregular, ineffective or agonal respiration requires ventilation via BVM.
    2. Active vomiting.
    3. Facial deformity/trauma/unable to obtain seal.
    4. Recent facial surgery.
    5. Foreign body airway obstruction.
    6. Age < 12 (or mask is too large for the patient's face).
    7. Suspected pneumothorax.

- B. Relative:
    1. Use with caution in the presence of hypotension. Monitor patient closely and use lower levels of PEEP pressure.

2. For patients unable to cooperate, encourage the patient to "try" the CPAP mask device. Manually holding the mask in place with one rescuer providing words of encouragement may encourage the frightened respiratory distress patient to maintain the device for longer periods.

VI. Procedure:
- A. Explain the procedure to the patient.
- B. Ensure adequate oxygen supply to ventilation device.
- C. Place patient in a seated position.
- D. Place the patient on continuous pulse oximetry.
- E. Prepare for backup airway management (such as bag-valve-mask ventilation).
- F. Follow the manufacturer's recommendations for mask placement and oxygen titration. Use 5 cm H20 of PEEP valve to start. Oxygen flow rate will be determined by the CPAP mask device that is being used.
- G. Place the mask on the patient's face, covering the mouth and nose. Ensure the mask fits adequately. Do not secure if the mask extends into the patient's eyes or does not seal to the chin. A smaller mask may be needed.
- H. Check for air leaks.
- I. If patient is anxious with the mask secured in place, hold the mask firmly in place or allow the patient to hold the device until they can tolerate the strap placement.
- J. Continue to coach patient to keep mask in place and readjust as needed.
- K. Observe patient for signs of inability to tolerate therapy, such as decreasing oxygen saturation, and increasing anxiety and combativeness.
- L. Monitor and document the patient's respiratory response to treatment.
- M. Increase PEEP flow in 2 cm H20 increments to max of 10 cm H20 if severe respiratory distress does not improve. Improvement is usually evident within five minutes of placing the CPAP mask. If patient continues to deteriorate, remove the CPAP mask and assist ventilations with BVM.
- N. Check and document vital signs every 5 minutes.
- O. Watch the patient closely for signs of fatigue or decreasing LOC. CPAP mask devices are only effective for those patients who can maintain their own respiratory effort.

VII. Considerations:
- A. Complications may include inducement of a pneumothorax.
- B. Closed system CPAP mask devices can only be used on conscious COPD patients as these patients may have significant gas trapping and will be unable to maintain a sufficient inspiratory/expiratory ratio. Continued use of CPAP in these patients will result in pneumothorax.

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C. An improvement with the use of the CPAP mask should be apparent within five minutes in most patients. If after the maximum PEEP level has been reached, 10mm H20, consider alternative interventions (i.e. bag-valve-mask ventilation).
D. If suctioning is necessary, maintain the CPAP mask and use oropharyngeal suctioning.
E. If the CPAP mask is too large for the patient, consider using the mask from the BVM for a better seal.

VIII. Documentation and Patient Care Reporting:
A. Provide the transporting crew/ hospital with the following information:
1. When the CPAP device was place.
2. What PEEP flow is currently being used.
3. All vital signs including serial pulse oximetry readings.