

**Respiratory Distress**

**Initial actions:**

- Conduct scene size-up, primary assessment, & immediate life-saving interventions. Have an airway adjunct, ventilation & suction devices nearby & ready.
- Promptly administer oxygen as tolerated by the patient and, if available, titrate with pulse oximetry to desired SpO<sub>2</sub>.
- Place the patient in a position of comfort (preferably seated in fowler’s position)
- Request Advanced Life Support (ALS) considering their availability & hospital proximity.
- Obtain baseline vital signs, SAMPLE history, & conduct a secondary assessment attentive to respiratory fatigue, failure, or arrest.

**Initiate the following treatment(s) as indicated & appropriate for awake, spontaneously breathing patients with respiratory distress.**

**Prompt transport is important – DO NOT delay transport to administer these treatments.**

Therapy	Short-acting bronchodilator mist		Continuous Positive Airway Pressure (CPAP)
<b>Form</b>	Metered Dose Inhaler (MDI)	<ul style="list-style-type: none"> <li>• Unit-dose solution by small volume nebulizer (SVN)</li> <li>• High-flow nebulizer (HFN)</li> </ul>	<ul style="list-style-type: none"> <li>• Driven by oxygen or air</li> <li>• Full face or nasal mask, NO nasal prongs</li> </ul>
<b>Source</b>	Must be prescribed for, & supplied by, the patient		<ul style="list-style-type: none"> <li>• Prescribed for, &amp; supplied by, the patient</li> <li>• Supplied by EMT/agency under Medical Director</li> </ul>
<b>Authorization</b>	All EMTs		<ul style="list-style-type: none"> <li>• Patient prescribed, or</li> <li>• EMTs under on-line Medical Control, or</li> <li>• Medical Director protocol</li> </ul>
<b>Age</b>	No restriction		18 years or older
<b>Indication(s)</b>	<ul style="list-style-type: none"> <li>• Dyspnea &amp; signs of respiratory distress associated with bronchospasm (breath sounds diminished or wheezing, retractions, etc.)</li> <li>• Alert patient physically able to use inhaler or nebulizer.</li> </ul>		<ul style="list-style-type: none"> <li>• Dyspnea &amp; signs of respiratory distress associated with pulmonary edema (breath sounds diminished, wheezing, or significant rales; retractions; etc.)</li> <li>• Continuation of CPAP therapy in progress prior to EMS arrival or initiated by ALS.</li> </ul>
<b>Contraindications</b>	<ul style="list-style-type: none"> <li>• Medication is expired.</li> <li>• Known hypersensitivity or allergy to the medication.</li> <li>• Inability of the patient to physically assist in using the device.</li> <li>• Maximum prescribed dose has been met or exceeded prior to EMS arrival</li> </ul>		<ul style="list-style-type: none"> <li>• Respiratory failure or apnea</li> <li>• Hypotension (SBP &lt; 100 mm Hg)</li> <li>• Pneumothorax</li> <li>• Facial, laryngeal, or pulmonary trauma</li> <li>• Tracheoesophageal fistula</li> <li>• Recent tracheal, esophageal, or gastric surgery</li> <li>• Active or anticipated vomiting or upper GI bleeding</li> <li>• Failure to tolerate or completely seal CPAP mask</li> </ul>
		<p align="center"><b><u>SVN and/or HFN</u></b></p> <p>Solution is discolored, cloudy, or precipitated</p>	
<b>Adverse Effects</b>	<ul style="list-style-type: none"> <li>• Hyperglycemia</li> <li>• Anxiety</li> <li>• Vomiting</li> <li>• Hypertension</li> <li>• Headache</li> <li>• Throat irritation</li> </ul>	<ul style="list-style-type: none"> <li>• Hypokalemia</li> <li>• Tremors</li> <li>• Dry mouth</li> <li>• Dyspepsia</li> <li>• Sinus tach</li> <li>• Paradoxical bronchospasm</li> </ul>	<ul style="list-style-type: none"> <li>• Palpitations</li> <li>• Nausea</li> <li>• Epitaxis</li> <li>• Insomnia</li> </ul>
			<ul style="list-style-type: none"> <li>• Claustrophobia</li> <li>• Excessive cooling</li> <li>• Difficulty exhaling</li> <li>• Pneumothorax</li> <li>• Edema</li> <li>• Subcutaneous emphysema</li> </ul>
			<ul style="list-style-type: none"> <li>• Epitaxis</li> <li>• Nausea</li> <li>• Cardiac arrhythmia</li> <li>• Pneumomediastinum</li> <li>• Aerophagia</li> </ul>
			<ul style="list-style-type: none"> <li>• Chest discomfort</li> <li>• Sinus discomfort</li> </ul>

**Respiratory Distress**

<b>Administration (MDI)</b>	<ul style="list-style-type: none"> <li>• Obtain &amp; use spacer, if available</li> <li>• Determine number of puffs that make one dose per physician order</li> <li>• Coach the patient to exhale, depress canister while inhaling, hold breath as long as comfortable, then exhale slowly through pursed lips or nose</li> <li>• Separate puffs within one dose with 30-60 seconds of oxygen</li> <li>• May repeat one full dose once if indications remain after 5 minute reassessment unless the repeat dose would exceed the maximum prescribed dose</li> </ul>			
<b>Administration (SVN) or (HFN)</b>	<ul style="list-style-type: none"> <li>• Select mouthpiece or mask delivery</li> <li>• Assemble &amp; supply O<sub>2</sub> to SVN or HFN according to manufacturer's specifications</li> <li>• Coach patient to slowly &amp; deeply inhale the mist, hold breath as long as comfortable &amp; then exhale slowly</li> <li>• Tap nebulizer as necessary to encourage solution to accumulate &amp; settle into cup/bowl &amp; sustain mist delivery</li> <li>• Replace the original oxygen device after fog concludes</li> <li>• May repeat once if indications remain after 5 minute reassessment unless the repeat dose would exceed the maximum prescribed dose</li> </ul>			
<b>Administration (CPAP)</b>	<ul style="list-style-type: none"> <li>• Limit CPAP to no more than 10 cm H<sub>2</sub>O unless directed by medical control or patient prescription</li> <li>• Brief patient on what to expect &amp; how to cooperate when CPAP mask is applied</li> <li>• Assemble &amp; supply O<sub>2</sub> to CPAP device according to manufacturer's specifications</li> <li>• Assure a snug fit of CPAP mask &amp; adequate O<sub>2</sub> supply</li> <li>• Reassess for tolerance of therapy, gastric distention, respiratory fatigue or failure, hypotension, &amp;, if available, SpO<sub>2</sub> desaturation</li> <li>• Be prepared to abandon CPAP &amp; provide original O<sub>2</sub> therapy or assisted ventilation</li> <li>• If possible, notify receiving facility prior to arrival that patient is receiving CPAP</li> </ul>			
<b>Documentation</b>	<b>MDI SVN HFN</b>	Note dose(s), time(s) of administration & patient response & communicate this during transfer of care to ALS and/or receiving facility staff	<b>CPAP</b>	Note therapy, CPAP pressure, & patient response & communicate this during transfer of care to ALS and/or receiving facility staff

**Initiate the following treatment(s) as indicated & appropriate for patients with respiratory fatigue/failure or arrest.**

**Prompt transport is important – DO NOT delay transport**

- Assess lung sounds and respiratory effort
- If ventilatory status is inadequate (patient is cyanotic, visible retractions, severe use of accessory muscles/poor work of breathing, altered mental status, respiratory rate less than 10 breaths per minute, or signs of poor perfusion) proceed with positive pressure ventilations via BVM.
  - Provide BLS according to AHA standards
  - Each ventilation should be sufficient to cause the chest to visibly rise without causing excessive gastric distention
  - Patients who require BVM ventilation should have a PEEP valve attached to the BVM set to 5-10 cm of water dependent on suspected etiology.
    - *See below note pertaining to Pulmonary Edema/CHF and Bronchoconstriction/COPD/Asthma for settings.*
  - Consider ventilating certain patients in the semi/full fowler's position.
  - Patients with severe congestive heart failure (CHF) will often decompensate in the supine position and should not be placed supine.
- Reassess patient, especially lung sounds and effort, vital signs, and oxygen saturation while en-route to the hospital.
- Transport should not be significantly delayed by on-scene activity

A note about *Pulmonary Edema/CHF and Bronchoconstriction/COPD/Asthma*

### **Acute exacerbations of Bronchoconstriction/COPD/Asthma**

**Symptoms include:** Cough, shortness of breath (SOB), wheezing, and/or air hunger.

**Signs include:** Wheezing, diminished breath sounds, retractions, and tachypnea. Patients with Bronchoconstriction can have rales and hypertension.

**Treatment:** Bronchodilators and steroids are the mainstay of treatment. CPAP generally with lower PEEP settings near **5** can often help reduce the patient's work of breathing and help nebulized medications get to the smaller airways.

### **Pulmonary Edema/CHF**

**Symptoms include:** SOB, orthopnea (increased distress when supine), air hunger, sensation and appearance of drowning, acute onset.

**Signs include:** Rales, tachypnea, pink frothy sputum, tripod position, often severe hypertension, lower extremity edema. Patients with CHF can wheeze

**Treatment:** A higher PEEP of **10** is often necessary to treat these patients.

Many patients suffer from both syndromes. Distinguishing between them is often a challenge. CPAP is generally effective for both conditions. Bronchodilators can be lifesaving for Bronchoconstriction/COPD/Asthma, yet can worsen CHF exacerbations. If in doubt, contact Medical Command.

