



**REGION 11
CHICAGO EMS SYSTEM
PROTOCOL**

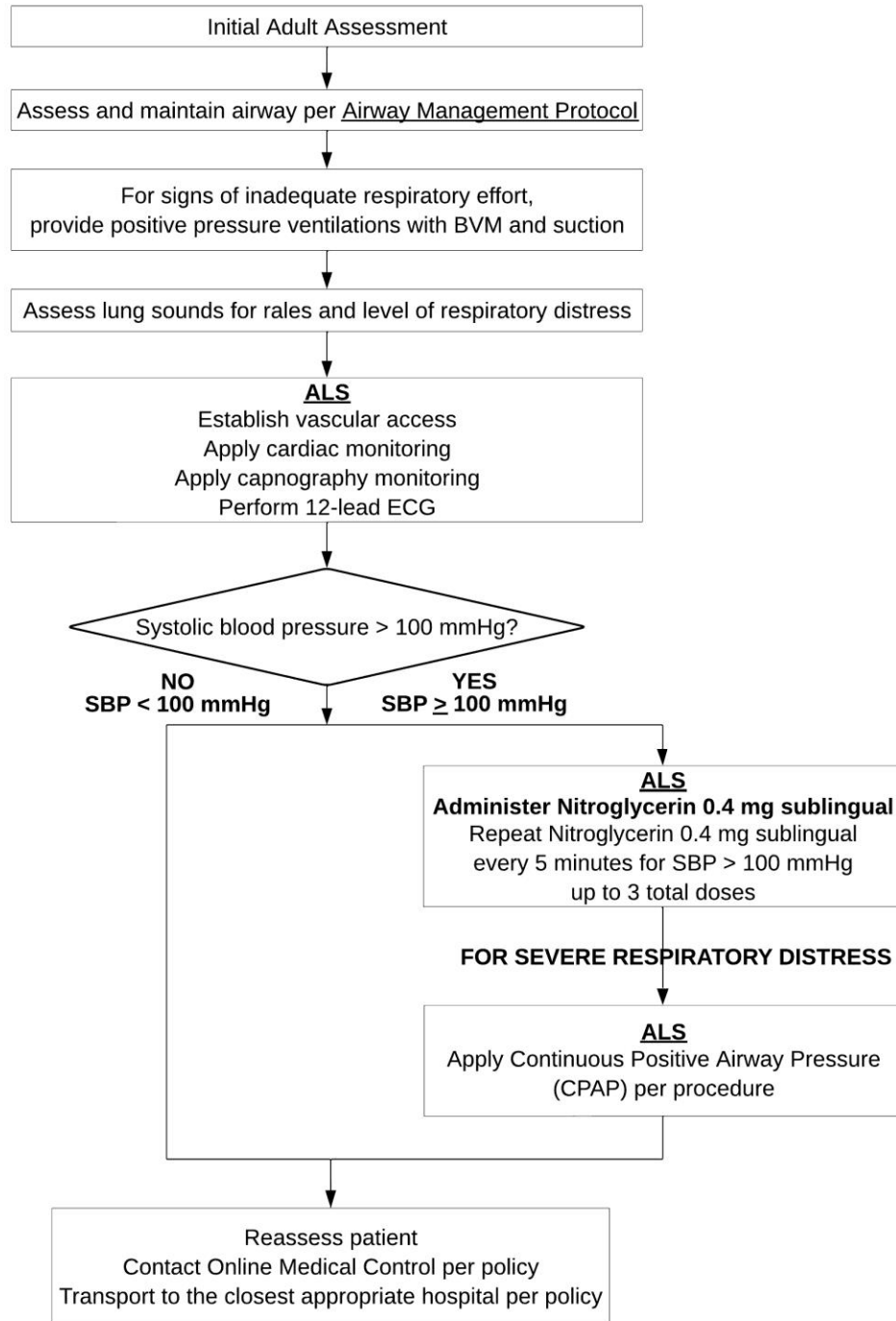
Title: Pulmonary Edema – BLS/ALS

Section: Respiratory

Approved: EMS Medical Directors Consortium

Effective: June 1, 2026

PULMONARY EDEMA - BLS/ALS





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PULMONARY EDEMA – BLS/ALS

I. PATIENT CARE GOALS

1. Recognize and alleviate respiratory distress for adult patients with pulmonary edema.
2. Provide effective oxygenation and ventilation.
3. Deliver appropriate therapy by differentiating from other causes of respiratory distress.

II. PATIENT PRESENTATION

A. Inclusion Criteria

1. Signs of severe respiratory distress
2. Signs of pulmonary edema (may present as wheezing)
3. Symptoms of shortness of breath with restlessness and anxiety

III. PATIENT MANAGEMENT

A. Assessment

1. History
 - a. Onset of symptoms
 - b. Treatments prior to EMS: nitroglycerin use
 - c. Medical history of congestive heart failure, pacemaker/defibrillator, coronary artery disease
2. Exam
 - a. Full set of vital signs (pulse, blood pressure, respiratory rate, oxygen saturation)
 - b. Air entry (normal vs. diminished, prolonged expiratory phase)
 - c. Auscultate breath sounds (wheezes, crackles, rales, rhonchi, diminished, clear)
 - d. Skin color (pallor, cyanosis, mottling, normal), temperature, moisture
 - e. Mental status (alert, tired, lethargic, unresponsive)
 - f. Signs of fluid overload including jugular venous distension (JVD) and peripheral edema
 - g. Signs of respiratory distress include:
 - Apprehension, anxiety, agitation, combativeness
 - Hypoxia (less than 90% oxygen saturation)
 - Intercostal/subcostal/supraclavicular retractions, accessory muscle use
 - Grunting, stridor, inability to speak full sentences
 - Nasal flaring
 - Tripod positioning
 - Diaphoresis



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B. Treatment and Interventions

1. Airway: See Airway Management Protocol for additional specifics.
 - a. Give supplemental oxygen for dyspnea to a target of 94–98% saturation. Start with a nasal cannula and escalate as needed to reach this goal.
 - b. BVM ventilation should be utilized for respiratory failure.
2. Monitoring
 - a. **ALS:** Apply end-tidal CO₂ by nasal route or in-line with BVM or advanced airway and document.
 - b. **ALS:** Apply continuous cardiac monitoring and document cardiac rhythm.
 - c. **ALS:** Perform 12-lead ECG to assess for dysrhythmia or ischemia.
3. IV Access and Fluids
 - a. **ALS:** Obtain IV access if IV medication administration is indicated or there are clinical concerns of dehydration so that IV fluids can be administered.
4. **Adults with suspected pulmonary edema due to acute heart failure or fluid overload**
 - a. Systolic blood pressure (SBP) less than 100 mmHg
 - Monitor and transport
 - b. Systolic blood pressure (SBP) 100 mmHg or higher
 - **ALS:** Administer Nitroglycerin 0.4 mg sublingual. Repeat Nitroglycerin 0.4 mg sublingual every 5 minutes for SBP 100 mmHg or higher for up to three total doses.
 - **ALS:** Apply continuous positive airway pressure (CPAP) for severe respiratory distress.

C. Patient Safety Considerations

1. Provide coaching as needed for CPAP mask use.
2. Avoid the use of nitrates in any patient who has used a phosphodiesterase inhibitor within the past 48 hours. Examples are sildenafil, vardenafil and tadalafil, which are used for erectile dysfunction and pulmonary hypertension.

IV. NOTES/EDUCATIONAL PEARLS

- A. Acute heart failure is a common cause of pulmonary edema – other causes include:
1. Opioid overdose after naloxone administration
 2. Kidney failure or dialysis nonadherence
 3. High altitude exposure