



# CHF / Pulmonary Edema

## History

- Congestive heart failure
- Past medical history
- Medications (digoxin, Lasix, Viagra / sildenafil, Levitra / vardenafil, Cialis / tadalafil)
- Cardiac history --past myocardial infarction

## Signs and Symptoms

- Respiratory distress, bilateral rales
- Apprehension, orthopnea
- Jugular vein distention
- Pink, frothy sputum
- Peripheral edema, diaphoresis
- Hypotension, shock
- Chest pain

## Differential

- Myocardial infarction
- Congestive heart failure
- Asthma
- Anaphylaxis
- Aspiration
- COPD
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pericardial tamponade
- Toxic Exposure

|          |   |
|----------|---|
|          | Airway Protocol(s) AR 1, 2, 3 <b>as indicated</b>   |
|          | Chest Pain and STEMI Protocol AC 4 <b>if indicated</b>  |
| <b>B</b> | 12 Lead ECG Procedure   |
|          | <b>Nitroglycerin 0.3 / 0.4 mg Sublingual</b><br>Repeat every 5 minutes x 3 <b>if prescribed to patient and (BP &gt;100)</b> |
| <b>P</b> | Cardiac Monitor   |
|          | IV / IO Procedure   |

Assess Symptom Severity

**MILD**  
Normal Heart Rate  
Elevated or Normal BP

**MODERATE / SEVERE**  
Elevated Heart Rate  
Elevated BP

**CARDIOGENIC SHOCK**  
Tachycardia followed by bradycardia  
Hypertension followed by hypotension

|          |  |
|----------|--|
| <b>A</b> | <b>Nitroglycerin 0.3 / 0.4 mg SL</b><br>Repeat every 5 minutes |
|          |  |

|          |   |
|----------|---|
| <b>B</b> | <b>Airway NIPPV Procedure</b>   |
| <b>A</b> | <b>Nitroglycerin 0.3 / 0.4 mg SL</b><br>Repeat every 5 minutes  |
|          |   |
| <b>P</b> | Consider <b>Furosemide 40 mg IV ONLY IE</b><br><i>Transport time &gt; 30 minutes<br/>Known CHF / Daily Lasix<br/>Afebrile</i> |

|          |   |
|----------|---|
| <b>B</b> | Remove NIPPV <b>if in place</b>                             |
|          | Adult Hypotension / Shock Protocol AM 5 <b>if indicated</b> |

Improving  
YES  
NO

**Notify Destination or Contact Medical Control**

Adult Cardiac Protocol Section



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## Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- **Items in Red Text are key performance measures used to evaluate protocol compliance and care**
- **Diuretics (furosemide) and opioids have NOT been shown to improve the outcomes of EMS patients with pulmonary edema. Even though this historically has been a mainstay of EMS treatment, it is no longer routinely recommended.**
- **Nitroglycerin:**
  - **Avoid Nitroglycerin in any patient who has used Viagra (sildenafil) or Levitra (vardenafil) in the past 24 hours or Cialis (tadalafil) in the past 36 hours due to potential severe hypotension.**
  - **Nitroglycerin may cause hypotension during any type myocardial infarction. It is NOT more likely to cause hypotension in an inferior MI and should NOT be avoided unless already hypotensive.**
- **Document the time of the 12-Lead ECG in the PCR as a Procedure along with the interpretation (Paramedic).**
- **Consider myocardial infarction in all these patients. Diabetics, geriatric and female patients often have atypical pain, or only generalized complaints.**
- **Cardiac related symptoms in men and women:**
  - **Pressure, squeezing, fullness, or pain in the chest.**
  - **Pain or discomfort in one or both arms, the back, neck, jaw, or stomach.**
  - **Shortness of breath with or without chest pain.**
  - **Sweating, nausea, weakness, and/or lightheadedness.**
  - **Women, diabetic patients, and the elderly often experience only weakness, shortness of breath, nausea/ vomiting, and back or jaw pain.**
- **If patient has taken nitroglycerin without relief, consider potency of the medication.**
- **Contraindications to opioids include severe COPD and respiratory distress. Monitor the patient closely.**
- **Monitor for hypotension after administration of nitroglycerin and opioids.**
- **Allow the patient to be in their position of comfort to maximize their breathing effort.**
- **EMT may administer Nitroglycerin to patients already prescribed medication. May give from EMS supply.**
- **Agency medical director may require Contact of Medical Control.**