

# 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
	Nitroglycerin 0.3 / 0.4 mg Sublingual Repeat every 5 minutes x 3 <b>if prescribed to patient and (BP &gt;100)</b>
<b>P</b>	Cardiac Monitor
<b>A</b>	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>	Nitroglycerin 0.3 / 0.4 mg SL Repeat every 5 minutes
	Nitroglycerin Paste 1 inch (SBP > 100 mmHg)

<b>B</b>	Airway CPAP Procedure
<b>A</b>	Nitroglycerin 0.3 / 0.4 mg SL Repeat every 5 minutes
	Nitroglycerin Paste 1 inch (SBP > 100 mmHg)
<b>P</b>	Consider Furosemide 40 mg IV <b>ONLY IF</b> Transport time > 30 minutes Known CHF / Daily Lasix Afebrile

<b>B</b>	Remove CPAP <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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Best practice is to administer NTG sublingual prior to CPAP application, then apply NTG paste. DO NOT DELAY CPAP APPLICATION TO ADMINISTER NTG SUBLINGUAL.

## 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**
- **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.**
- **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.**
- **Carefully monitor the level of consciousness, BP, and respiratory status with the above interventions.**
- **If CHF / Cardiogenic shock resulting from inferior MI (II, III, aVF), consider Right Sided ECG (V3 or V4). If ST elevation noted Nitroglycerin and / or opioids may cause hypotension requiring normal saline boluses.**
- 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.
- Consider myocardial infarction in all these patients. Diabetics, geriatric and female patients often have atypical pain, or only generalized complaints.
- Allow the patient to be in their position of comfort to maximize their breathing effort.
- Document CPAP application using the CPAP procedure in the PCR. Document 12 Lead ECG using the 12 Lead ECG procedure.
- **EMT may administer Nitroglycerin to patients already prescribed medication. May give from EMS supply.**
- Agency medical director may require Contact of Medical Control.