



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 as indicated
	Chest Pain and STEMI Protocol AC 4 if indicated
B	12 Lead ECG Procedure
	NITROGLYCERIN 0.3 / 0.4 mg Sublingual Repeat every 5 minutes x 3 if prescribed to patient and (BP >100)
P	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

A	NITROGLYCERIN 0.3 / 0.4 mg SL Repeat every 5 minutes
	NITROGLYCERIN PASTE 1 inch (SBP > 100 mmHg)

B	Airway NIPPV Procedure
A	NITROGLYCERIN 0.3 / 0.4 mg SL Repeat every 5 minutes
	NITROGLYCERIN PASTE 1 inch (SBP > 100 mmHg)
P	Consider FUROSEMIDE 40 mg IV ONLY IF Transport time > 30 minutes Known CHF / Daily Lasix Afebrile

B	Remove NIPPV if in place
	Adult Hypotension / Shock Protocol AM 5 if indicated

Improving

YES

NO

Notify Destination or Contact Medical Control

Adult Cardiac Protocol Section



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Best practice is to administer NTG sublingually prior to CPAP application, but it is acceptable to apply NTG paste after CPAP application.

DO NOT DELAY CPAP APPLICATION TO ADMINISTER NTG SUBLINGUALLY.

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.**