








## ***Pulmonary Edema/Cardiogenic Shock***

This protocol is to be followed for patients in respiratory distress due to pulmonary edema with or without hypotension (i.e., CHF/fluid overload or Cardiogenic Shock). Pulmonary edema usually presents with crackles which should be continuously evaluated as they may evolve with treatments.

1. Follow **1.1 General Pre-Hospital Care-Treatment Protocol**.
2. Initiate supplemental oxygen by non-rebreather mask.
3. Position patient upright with legs dependent, if possible.
-  4. Consider CPAP per **7.5 CPAP-Procedure Protocol**
-  5. Establish IV access without delaying treatment per **7.23 Vascular Access & IV Fluid Therapy-Procedure Protocol**.
-  6. If wheezing, administer **albuterol** 2.5 mg/3ml **NS** nebulized (Per MCA selection may be EMT skill) per **9.1 Medication Administration-Medication Protocol**

Nebulized **albuterol** administration per  
MCA selection  
 EMT

-  7. If crackles (with or without wheezing) administer **nitroglycerin** as outlined below.
  - a. Inquire of all patients regardless of identified gender if they have taken an erectile dysfunction medication or medications used to treat pulmonary hypertension in the last 48 hours.
    -  i. If yes, **DO NOT ADMINISTER NITROGLYCERIN AND CONTACT MEDICAL CONTROL.**
  - b. Prior to IV administration if no erectile dysfunction medication and systolic BP is above 120 mmHG, **nitroglycerin** 0.4mg sublingual may be administered up to a maximum of 3 doses.
  - c. If SBP above 100 mmHg (with IV/IO in place), administer **nitroglycerin** 0.4 mg SL, repeat every 3-5 minutes if SBP remains above 100 mmHg.
  -  d. If wheezing continues, continue **nitroglycerin** 0.4 mg SL and consider: **albuterol/ipratropium bromide** per **3.3 Respiratory Distress-Treatment Protocol**
8. If SBP is below 100 mmHG treat for cardiogenic shock.
  - a. Prepare (**epinephrine** 10 mcg/mL) by combining 1mL of 1mg/10mL **epinephrine** in 9mL **NS**
    - i. Administer 20 mcg (2 mL **epinephrine** 10 mcg/mL) IV/IO
    - ii. Repeat every 3-5 minutes
    - iii. Titrate SBP greater than 90 mm/Hg.
9. If indicated, consider an advanced airway see **7.9 Airway Management-Procedure Protocol**.
-  10. Obtain 12-lead ECG (May be a BLS or Specialist skill, per MCA selection, see **7.1 12 Lead ECG-Procedure Protocol**). Follow MCA transport protocol if ECG is positive for ST segment elevation myocardial infarction (STEMI) and alert hospital as soon as possible.



**Oakland County Medical Control Authority**  
**ADULT CARDIAC**  
**PULMONARY EDEMA/CARDIOGENIC SHOCK**

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Medication References

Albuterol

Epinephrine

Nitroglycerin

Protocol Source/Reference: Michigan 5.4 Pulm Edema\_Cardiogen; Version 6/3/23.