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 e**pinephrine** 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.

Protocol Source/Reference: Michigan 5.4 Pulm Edema_Cardiogen; Version 6/3/23.