

## PULMONARY EDEMA

Patients experiencing pulmonary edema will have rales or crackles on lung exam and may exhibit with JVD and/or peripheral edema and/or frothy sputum. Rales can also be heard in patients with lung infections who are not in pulmonary edema and furosemide is not appropriate treatment for these patients. Patients in severe pulmonary edema may benefit from assistance with positive pressure ventilation.

- A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.
- B. If patient is in severe respiratory distress, consider CPAP if available per **CPAP Protocol 8301**. CPAP should be initiated for a minimum of five (5) minutes prior to administration of nitroglycerine.
- C. If patient has rales and an initial blood pressure is > 110 **systolic**; administer **Nitroglycerine** 0.4 mg every 3 – 5 minutes up to a total of three (3) doses or 1.2 mg. **Obtain a manual BP between doses of Nitroglycerine and assess the patient's response prior to administering subsequent doses.**

**NOTE:** If patient has taken Sildenafil (*Viagra®*) or Vardenafil (*Levitra®*) within last 24 hours, or Tadalafil (*Cialis®*) within the last 72 hours, treat per D - K of this protocol.

- D. If patient **DOES NOT** take **Furosemide (Lasix®)** and **systolic** BP remains > 100; administer **Furosemide** 40 mg IV/IO.
- E. If patient **DOES** take **Furosemide (Lasix®)** and **systolic** BP remains > 100; administer **Furosemide** 80 mg IV/IO.
- F. If patient is in severe respiratory distress, consider CPAP if available per **CPAP Protocol 8301**.
- G. **If wheezing is present**, administer **Albuterol** 2.5 mg combined with **Ipratropium Bromide (Atrovent®)** 0.5 mg (Combi-Vent / Duo-Neb) with oxygen 8 - 10 LPM. If **Ipratropium Bromide (Atrovent®)** is contraindicated or the patient is a pediatric, administer **Albuterol** only.

H. May repeat **Albuterol** 2.5 mg combined with **Ipratropium Bromide (Atrovent®)** 0.5 mg (Combi-Vent / Duo-Neb) per order of **Medical Command**. If **Ipratropium Bromide (Atrovent®)** is contraindicated or the patient is a pediatric, administer **Albuterol** only.



I. Transport with **further orders per MCP**.



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- J. If blood pressure < 90 systolic and patient has rales and JVD:
1. Expedite transport and monitor vital signs closely.
  2. Contact **Medical Command** for further orders per MCP.
- K. If blood pressure is < 90 systolic, refer to **Shock Protocol 4108**.

