

CHF/Pulmonary Edema Administrative Guideline



History

- Congestive heart failure
- Medications (digoxin, Lasix, Viagra/sildenafil, Levitra/vardenafil, Cialis/tadalafil)
- Cardiac history/past myocardial infarction

Signs and Symptom

- Respiratory distress
- Crackles on lung exam
- Jugular vein distention
- Frothy/pink sputum
- Peripheral edema, diaphoresis
- Hypotension, shock
- Chest pain

Differential

- CHF exacerbation
- MI
- Asthma/COPD/Pneumonia/PE
- Pericardial effusion/tamponade
- Aspiration
- Noncardiogenic pulmonary edema

Respiratory distress with signs of fluid overload and pulmonary edema

B	Administer oxygen and titrate to SpO ₂ of ≥ 94% May obtain 12 lead ECG for paramedic interpretation
P	Cardiac monitoring Perform 12-lead ECG and transmit when available
P	Administer nitroglycerin 0.4 mg SL tab if SBP > 110 mm Hg Repeat every 5 min to total of 3 doses, as BP allows Administer aspirin 324 mg PO chewed

STEMI ALERT
(STEMI = 1 mm ST segment elevation in ≥ 2 contiguous limb leads or 2 mm elevation in precordial leads (v leads))

No clinical improvement; continued hypoxia or respiratory distress

B	CPAP: Continuous positive airway pressure ventilation as blood pressure allows Begin with 5 cmH₂O , increase by 2.5cm cmH ₂ O increments upto a max of 10 cmH₂O
P	<i>For patients with agitation that interferes with necessary patient care</i> Administer midazolam 0.05 mg/kg IM/IV/IO (max dose 2.5 mg) May repeat x1 after 10 minutes to a max total dose of 5mg IV/IO ≤14 or > 65 years max initial and total doses are half ≤ 8 yrs: <i>Contact Medical Direction for orders</i> <i>Use caution when patient at risk for hypotension, as midazolam administration will lower blood pressure.</i>

Obtain second IV

Transport patient to **Cardiac Receiving Center** or **Certified Chest Pain Center** with 24/7 cath lab capabilities

Patients without STEMI can be transported to the nearest receiving facility



Education/Pearls

Heart failure describes a clinical syndrome in which the heart's ability to pump is impaired. When a patient experiences an increase in their fluid status (ingestion of excess fluid or salt) or a decrease in their heart's ability to pump (such as a myocardial infarction or valve failure), a heart failure exacerbation may occur and fluid may build up in the body. Pulmonary edema is a dangerous consequence and can impair breathing and gas exchange. Commonly, patients with heart failure may not tolerate lying supine and may complain of chest pain, shortness of breath, or sudden night-time awakening. Treatment goals include avoidance of fluid in the setting of fluid overload, nitroglycerin for hypertension, providing as needed ventilatory support with CPAP, and determining the underlying cause (such as a myocardial infarction).

- Patients with heart failure should receive an ECG.
- Use care in administration of fluid in hypotension, as this may worsen respiratory status.

Nitroglycerin: By dilating vasculature, nitroglycerin may improve the left ventricle's ability to function and assist in respiratory function in the setting of fluid overload. Its use should be considered in patients with heart failure, high blood pressure, and evidence of respiratory distress.

- The use of **nitroglycerine is contraindicated** within 24-48 hours of the use of erectile dysfunction medication (sildenafil, tadalafil).
- Use caution when providing nitroglycerin to patients that demonstrate inferior STEMI patterns (II, III, aVF), as this may represent a right-sided MI that is preload dependent, that may lead to sudden and severe hypotension with nitroglycerine.
- Nitroglycerin may be repeated per dosing guidelines.
- Monitor for hypotension after administration.

Continuous Positive Airway Pressure (CPAP): Noninvasive Positive Pressure Ventilation (NIPPV), such as CPAP, supports respiratory status in patients with evidence of pulmonary edema.

- Patients who receive CPAP may experience a decrease in mental status and blood pressure. Closely monitor vitals and mental status, and discontinue CPAP for shock, vomiting, or altered LOC.
- Patients with a decreased GCS or inability to protect their airway are at risk for aspiration and should not receive NIPPV.
- Consider Midazolam to assist with CPAP compliance. Benzodiazepines may precipitate respiratory depression or may worsen compliance with CPAP in patients who are already tired, already have altered LOC, or who have recent history of alcohol or drug ingestion. Benzodiazepines may also cause hypotension. All efforts at verbal coaching should be utilized prior to giving benzodiazepines for patients in respiratory distress.