SECTION: C-8

TITLE: Congestive Heart Failure/Pulmonary Edema

REVISED: July 01, 2024

Protocol C-8

Congestive Heart Failure/Pulmonary

GENERAL COMMENTS: This protocol is intended for CHF/Pulmonary edema in the normotensive or hypertensive patient. For CHF with Hypotension, see Protocol M-3, “Adult Hypotension and Shock”

BLS SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

- Titrate oxygenation and ventilation to 94-98% SPO2
- Follow up vitals every 5 minutes or sooner.
- Obtain 12 lead (if feasible/Available) . STEMI patients should be transported to appropriate PCI capable facilities.
- Consider assisted Positive Pressure Ventilation with a BVM for severe distress until CPAP is available.

AEMT/O.M. SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

Respiratory Support

- *Consider Assisted/Intermittent Positive Pressure Ventilation*
- *CPAP: See also Appendix 6: CPAP*
  - **Medical Control Required if SBP less than 90 systolic.**
  - *Initial setting at 2- 5 cmH2O, MAX: 10 cmH2O*

ALS SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

Respiratory Support

- As an alternative to CPAP: *Appendix 32: Mechanical ventilation for BiLevel (AKA BiPAP).*
- If coaching is unsuccessful, then consider low-dose sedation. See the Protocol M-15: Sedation for Painful Procedures.

Nitrates ***(** See physician PEARLS)***:

- **NTG Spray**: For patients in respiratory distress, signs of severe pulmonary edema,
  - SL: 0.4 mg SL spray/tab every 3-5 minutes PRN
  - Hold for SBP <100 mmHg, or Viagra use (or similar drug) within previous 24-48 hours.
  - Use with caution in suspected right-sided MI
- **HIGH DOSE NTG SPRAY:** For patients in extreme respiratory distress, signs of severe pulmonary edema, with associated HTN (SYSTOLIC B/P > 200 mmHG).
  - SL: 0.8 mg SL (0.4 mg spray/tab x2) every 5 minutes PRN
  - Hold for Viagra use (or similar drug) within previous 24 - 48 hours.
  - Return to normal dosing when B/P drops below 200 mm Hg.

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- **NTG Paste**: Initiate if NTG is successful in reducing discomfort
  - TD: 0.5-1.5 inches applied topically (TD) to non-hairy area of trunk.
  - Hold for SBP <100 mmHg, or Viagra use (or similar drug) within previous 24-48 hours. Use with caution in suspected right-sided MI
  - Wipe off if hypotension develops

PHYSICIAN PEARLS:

- Bilevel vs. CPAP: Start with CPAP first. If CPAP is working well, there is no need to switch to BiLevel. Continue CPAP. Some patients tolerate CPAP better than BiLevel. Starting with BiLevel before CPAP sometimes increases anxiety and patient struggle.
- Advise the receiving hospital as soon as possible so they can prepare for the patient's arrival. Use of CPAP/BiLevel (BiPAP) is a code critical criteria.
- The primary concern with nitroglycerine use is iatrogenic **hypotension** relative to the myocardial demand, which may increase mortality and morbidity. This can occur even with SBP > 100 mmHg. If precipitous drop is noted, use subsequent doses judiciously.