Cardiogenic Shock

Note:
- Shock is defined as inadequate perfusion of vital organs, not merely hypotension.
- Circulatory failure is due to inadequate cardiac function.
- Be aware of patients with congenital defects.
- Cardiogenic shock exists in the pre-hospital setting when heart malfunction (such as an MI) is suspected and there is no specific indication of volume related shock.
- Pulmonary Edema or CHF may cause or be caused by cardiogenic shock (pediatrics with congenital heart defects may rarely have pulmonary edema).
- Marked, symptomatic tachycardia and bradycardia will also cause cardiogenic shock.

**EMERGENCY MEDICAL RESPONDER (EMR)/ EMERGENCY MEDICAL TECHNICIAN (EMT)/ ADVANCED EMT (AEMT) / INTERMEDIATE/ PARAMEDIC**

1. Initial Medical Care.
   a. Maintain airway.
   b. Titrate supplemental oxygen to lowest level to maintain pulse ox greater than 93%\(^1\) (if severe underlying lung disease goal is 88-92%). Do not withhold oxygen if you do not have ability to assess O2 saturations.

2. Remove all transdermal patches with gloves.

3. Place in position of comfort.

**EMERGENCY MEDICAL TECHNICIAN (EMT)/ ADVANCED EMT (AEMT) / INTERMEDIATE/ PARAMEDIC**

4. Obtain 12 lead EKG** within 5 minutes of patient contact. Interpret and/or transmit to receiving hospital for interpretation.

5. Consider CPAP if patient is in severe respiratory distress. Follow CPAP protocol.

6. If SBP greater than 100 mm Hg, follow CHF/Pulmonary edema protocol.

**ADVANCED EMT (AEMT) / INTERMEDIATE/ PARAMEDIC**

7. Establish IV/IO**

8. If hypovolemic and/or dehydrated and lungs are clear: Fluid bolus in 500 mL increments up to 2 liters.

**Contact Medical Control for the following:**
- Additional orders

**PARAMEDIC**

9. For Patients with systolic BP less than 100 mmHg WITH evidence of poor tissue perfusion (cold periphery, altered mental status, etc.) DESPITE correction of non-cardiac factors (hypovolemia, hypoxia, acidosis, and dysrhythmias).
   a. If SBP 70-100 mmHg and signs of shock start Dopamine 5 mcg/kg/min. Titrate up to 20 mcg/kg/min or SBP greater than or equal to 100 mmHg
   b. If SBP less than 70 mmHg give Dopamine at 20 mcg/kg/minute and when SBP greater than or equal to 100 mm Hg titrate down

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\(^1\) Cyanotic Heart Disease pulse ox goal 75-85%

**12 lead EKG is an additional skill at the EMT & AEMT level requiring additional training approved by the Medical Director and State Approval**

**IO is an additional skill at the AEMT level requiring additional training approved by the Medical Director and State Approval.**

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10. For Patients with systolic BP less than 100 mmHg WITHOUT evidence of poor tissue perfusion (cold periphery, altered mental status, etc.).
   a. Correct non-cardiac factors (hypovolemia, hypoxia, acidosis, and dysrhythmias)
   b. Transport

<table>
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<tr>
<th>Weight</th>
<th>Kilograms</th>
<th>Start at 5 mcg/kg/min</th>
<th>Do not exceed 20 mcg/kg/min</th>
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<tr>
<td>88</td>
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<td>8 gtts/min</td>
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<td>130</td>
<td>24 gtts/min</td>
<td>98 gtts/min</td>
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</table>

**Notes:** Always titrate to patient response. Individual dosage requirements vary widely by weight.