Hypotension / Shock

History
- Blood loss - vaginal or gastrointestinal bleeding, AAA, ectopic
- Fluid loss - vomiting, diarrhea, fever
- Infection
- Cardiac ischemia (MI, CHF)
- Medications
- Allergic reaction
- Pregnancy
- History of poor oral intake

Signs and Symptoms
- Restlessness, confusion
- Weakness, dizziness
- Weak, rapid pulse
- Pale, cool, clammy skin
- Delayed capillary refill
- Hypotension
- Coffee-ground emesis
- Tarry stools

Differential
- Shock
  - Hypovolemic
  - Cardiogenic
  - Septic
  - Neurogenic
  - Anaphylactic
- Ectopic pregnancy
- Dyshrhythmias
- Pulmonary embolus
- Tension pneumothorax
- Medication effect / overdose
- Vasovagal
- Physiologic (pregnancy)

Blood Glucose Analysis Procedure

<table>
<thead>
<tr>
<th>B</th>
<th>12 Lead ECG Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>IV Procedure</td>
</tr>
<tr>
<td>P</td>
<td>IO Procedure</td>
</tr>
</tbody>
</table>

Cardiac / Arrhythmia Protocol(s)

Diabetic Protocol if indicated

Airway Protocol(s) if indicated

History, Exam and Circumstances Suggest Type of Shock

Hypovolemic
- Spinal Immobilization Procedure if indicated
  - Normal Saline Bolus 500 mL IV Repeat to effect SBP > 90 Maximum 2 L
  - Trauma
    - 1X 1 gm over 10 minutes IV/IO as Indicated
    - Wound Care Procedures as indicated
    - Control Hemorrhage
    - Exit to Multiple Trauma Protocol

Cardiogenic
- Right Sided MI
  - NO

  - Normal Saline Bolus 500 mL IV Repeat to effect SBP > 90
    - Maximum 2 L
  - Trauma
  - Notify Destination or Contact Medical Control

  - Notify Destination or Contact Medical Control

  - Notify Destination or Contact Medical Control

Distributive
- Spinal Immobilization Procedure if indicated
  - Normal Saline Bolus 500 mL IV Repeat to effect SBP > 90
    - Maximum 2 L
  - Dopamine 5 – 20 mcg/kg/min IV/IO to effect SBP > 90

Obstructive
- Spinal Immobilization Procedure if indicated
  - Normal Saline Bolus 500 mL IV Repeat to effect SBP > 90
    - Maximum 2 L
  - Dopamine 5 – 20 mcg/kg/min IV/IO to effect SBP > 90

Protocols

- Adult Medical Section Protocols
- Protocol 30

Any local EMS System changes to this document must follow the NC EMS Protocol Change Policy and be approved by OCMC.
Hypotension / Shock

Pearls

- Recommended Exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro

- Hypotension can be defined as a systolic blood pressure of less than 90. This is not always reliable and should be interpreted in context and patients typical BP if known. Shock may be present with a normal blood pressure initially.

- Shock often present with normal vital signs and may develop insidiously. Tachycardia may be the only manifestation.

- Consider all possible causes of shock and treat per appropriate protocol.

Hypovolemic Shock:
- Hemorrhage, trauma, GI bleeding, ruptured aortic aneurysm or pregnancy-related bleeding.
  - Tranexamic Acid (TXA):
    - Agencies utilizing TXA must have approval from your T-RAC.

Cardiogenic Shock:

Distributive Shock:
- Sepsis
- Anaphylactic
- Neurogenic: Hallmark is warm, dry, pink skin with normal capillary refill time and typically alert.
- Toxins

Obstructive Shock:
- Pericardial tamponade, Pulmonary embolus. Tension pneumothorax.
- Signs may include hypotension with distended neck veins, tachycardia, unilateral decreased breath sounds or muffled heart sounds.

Acute Adrenal Insufficiency: State where body cannot produce enough steroids (glucocorticoids / mineralocorticoids.) May have primary adrenal disease or more commonly have stopped a steroid like prednisone. Usually hypotensive with nausea, vomiting, dehydration and / or abdominal pain. If suspected EMT-P should give Methylprednisolone 125 mg IV / IO or Dexamethasone 10 mg IV / IO. May use steroid agent specific to your drug list. May also administer prescribed steroid carried by patient IV / IO.

For non-cardiac, non-trauma hypotension, Dopamine should only be started after 1-2 liters of NS have been given.

Protocol 30

*All protocols are subject to change without notice. Institute local protocols. EMS protocol changes must be approved by Nurse.*
Hypotension / Shock

Pearls
- Recommended Exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro
- Lowest blood pressure by age: < 31 days: > 60 mmHg. 31 days to 1 year: > 70 mmHg. Greater than 1 year: 70 + 2 x age in years.
- Consider all possible causes of shock and treat per appropriate protocol. Majority of decompensation in pediatrics is airway related.
- Decreasing heart rate and hypotension occur late in children and are signs of imminent cardiac arrest.
- Shock may be present with a normal blood pressure initially.
- Shock often is present with normal vital signs and may develop insidiously. Tachycardia may be the only manifestation.
- Consider all possible causes of shock and treat per appropriate protocol.
- **Hypovolemic Shock:**
  Hemorrhage, trauma, GI bleeding, ruptured aortic aneurysm or pregnancy-related bleeding.
- **Cardiogenic Shock:**
  Heart failure: MI, Cardiomyopathy, Myocardial contusion, Ruptured ventricular / septum / valve / toxins.
- **Distributive Shock:**
  Sepsis
  Anaphylactic
  Neurogenic: Hallmark is warm, dry, pink skin with normal capillary refill time and typically alert.
  Toxins
- **Obstructive Shock:**
  Pericardial tamponade. Pulmonary embolus. Tension pneumothorax.
  Signs may include hypotension with distended neck veins, tachycardia, unilateral decreased breath sounds or muffled heart sounds.
- **Acute Adrenal Insufficiency:** State where body cannot produce enough steroids (glucocorticoids / mineralocorticoids.) May have primary adrenal disease or more commonly have stopped a steroid like prednisone. Usually hypotensive with nausea, vomiting, dehydration and / or abdominal pain. If suspected EMT-P should give Methylprednisolone 2 mg/kg IV / IO or Dexamethasone 0.3 mg/kg (Maximum 10 mg) IV / IO. Use agency-specific steroid.

Protocol 59

Any local EMS system changes to this document must follow the NC OEMS Protocol Change Policy and be approved by OEMS.