



# Pediatric Hypotension/ Shock

## History

- Blood loss
- Fluid loss
- Vomiting
- Diarrhea
- Fever
- Infection

## Signs and Symptoms

- Restlessness, confusion, weakness
- Dizziness
- Tachycardia
- Hypotension (Late sign)
- Pale, cool, clammy skin
- Delayed capillary refill
- Dark-tarry stools

## Differential

- Shock
  - Hypovolemic
  - Cardiogenic
  - Septic
  - Neurogenic
  - Anaphylactic
- Trauma
- Infection
- Dehydration
- Congenital heart disease
- Medication or Toxin

### Age Specific Blood Pressure indicating possible shock

Age 0 – 28 days: SBP < 60  
 Ages ≥ 1 month: SBP < 70  
 Age 1 – 9: SBP < 70 + (2x Age)

Ages 10 – 64: SBP < 90  
 Ages ≥ 65: SBP < 110

All ages Shock Index:  
 HR > SBP

	Blood Glucose Analysis Procedure
	IV or IO Access Protocol UP 6
<b>P</b>	Cardiac Monitor
	Pediatric Airway Protocol(s) <i>if indicated</i>
	Diabetic Protocol PM 2 <i>if indicated</i>

History and Exam Suggest Type of Shock

**Cardiogenic**

**Hypovolemic**

**Distributive**

**Obstructive**

Chest Pain: Cardiac and STEMI  
 Protocol AC 4  
 Appropriate Pediatric Arrhythmia Protocol(s)  
*if indicated*

**A**  
 Normal Saline Bolus  
 5 – 10 mL / kg IV / IO  
 Titrate to age appropriate  
 SBP ≥ 70 + (2 x Age)  
 Maximum 10 mL / kg

Pediatric Allergy Protocol PM 1  
*if indicated*  
 Suspected Sepsis Protocol UP 15  
*if indicated*  
 Multiple Trauma Protocol TB 6  
*if indicated*

**A**  
 Normal Saline Bolus  
 20 mL / kg IV / IO  
 Titrate to age appropriate  
 SBP ≥ 70 + (2 x Age)  
 Maximum 60 mL / kg

**P**  
 Norepinephrine  
 0.05-0.1mcg/kg/min  
 Titrate up to 2mcg/kg  
 Dopamine 5-20  
 Mcg/kg/min IV/IO  
 Titrate to age appropriate  
 SBP ≥ 70 + 2 x Age

**P**  
 Chest Decompression-  
 Needle Procedure  
*if indicated*

Notify Destination or  
 Contact Medical Control



# Hypotension/ Shock

## Pearls

- **Recommended Exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- Consider all possible causes of shock and treat per appropriate protocol. Majority of decompensation in pediatrics is airway or respiratory related.
- Decreasing heart rate and hypotension occur late in children and are signs of impending cardiac arrest.
- Shock may be present with a normal blood pressure initially or even elevated.
- Shock often is present with normal vital signs and may develop insidiously. Tachycardia may be the first and only sign.
- Consider all possible causes of shock and treat per appropriate protocol.
- **Hypovolemic Shock:**
  - Hemorrhage, trauma, GI bleeding, or pregnancy-related bleeding.
  - Tranexamic Acid (TXA):**
    - Agencies utilizing TXA must submit letters from their receiving trauma centers for approval by the OEMS Medical Director.
    - Receiving trauma centers must agree to continue TXA therapy with repeat dosing.
    - TXA is NOT indicated and should NOT be administered where trauma occurred > 3 hours prior to EMS arrival.
- **Cardiogenic Shock:**
  - Heart failure: MI, Cardiomyopathy, Myocardial contusion, Ruptured ventricle/ septum/ valve/ toxins.
- **Distributive Shock:**
  - Septic/ Anaphylactic/ Neurogenic/ Toxic
  - Hallmark is warm, dry, pink skin with normal capillary refill time and typically alert.
- **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 or Congenital Adrenal Hyperplasia:**
  - Body cannot produce enough steroids (glucocorticoids/ mineralocorticoids.)
  - May have primary or secondary adrenal disease, congenital adrenal hyperplasia, or more commonly have stopped a steroid like prednisone. Injury or illness may precipitate.
  - Usually hypotensive with nausea, vomiting, dehydration and/ or abdominal pain.
  - If suspected, Paramedic should give Methylprednisolone 125 mg IM / IV / IO or Dexamethasone 10 mg IM / IV / IO.**
  - Use steroid agent specific to your drug list.**
  - May administer prescribed steroid carried by patient IM / IV / IO. Patient may have Hydrocortisone (Cortef or Solu-Cortef). Dose: < 1y.o. give 25 mg, 1-12 y.o. give 50 mg, and > 12 y.o. give 100 mg or dose specified by patient's physician.**