



- b. Cardiac problems
- c. Stroke
- d. Fever
- e. Nausea/vomiting, diarrhea
- f. Frequent or no urination
- g. Syncopal episode
- h. Allergic reaction
- i. Immunocompromise (malignancy, transplant, asplenia)
- j. Adrenal insufficiency
- k. Presence of a central line or port
- l. Other risk of infection (spina bifida or other genitourinary anatomic abnormality)
- m. Overdose
- 2. Exam
 - a. Airway/breathing (airway edema, rales, wheezing, pulse oximetry, respiratory rate)
 - b. Circulation (heart rate, blood pressure, capillary refill)
 - c. Abdomen (hepatomegaly)
 - d. Mucous membrane hydration
 - e. Skin (turgor, rash)
 - f. Neurologic (GCS, sensorimotor deficits)
- 3. Determination of type of shock
 - a. Cardiogenic
 - b. Distributive (neurogenic, septic, anaphylactic)
 - c. Hypovolemic
 - d. Obstructive (e.g., pulmonary embolism, cardiac tamponade, tension pneumothorax)

Treatment and Interventions

- 1. Check vital signs
- 2. Administer oxygen as appropriate with a target of achieving 94–98% saturation
- 3. Cardiac monitor
- 4. Pulse oximetry and EtCO₂ (reading of less than 25 mmHg may be sign of poor perfusion)
- 5. Check blood sugar, and correct if less than 60 mg/dL
- 6. EKG
- 7. Check lactate, if available (greater than 2 mmol/L is abnormal)
- 8. Establish IV access. If unable to obtain within two attempts or less than 90 seconds, place an IO needle
- 9. IV fluid volume goal attained by giving boluses that are pressure infused over less than 15 minutes each based on patient's condition and clinical impression. Fluid volume goal to achieve a mean arterial pressure (adults) or other targets (pediatrics). Mean Arterial Pressure is calculated: $(MAP = [(2 \times \text{diastolic}) + \text{systolic}] / 3)$
 - a. Adult
 - i. Physiologic target: MAP goal 65 mmHg
 - ii. Fluid goal of up to 30 mL/kg of isotonic fluid by administering rapid, predetermined boluses (e.g., 500 mL) unless the MAP goal is achieved, or pulmonary edema develops.
 - iii. If available, the administration of packed red blood cells or whole blood may be indicated for hemorrhagic shock
 - b. Pediatric