

SHOCK, SEPSIS, & FLUID THERAPY

ALL PROVIDERS / EMT

- Focused history and physical exam
 - Blood glucose, oxygen saturation and temperature assessment
 - Consider shock in patients with one or more of the following:
 - Vital signs: HR >100, SBP of <90mmHg for adults, SBP <70 + (age in years x 2) mmHg for children, or RR >20 BPM
 - Skin signs: cold clammy skin, febrile, or delayed capillary refill
 - Mental status: altered, lethargic, or irritable (esp. in infants).
- Evaluate for the source of shock including distributive (e.g. infection, anaphylaxis), hypovolemic (e.g. hemorrhagic, vomiting/diarrhea, heat exposure), neurologic (i.e. spinal injury), or cardiogenic
- Sepsis Alert** – Contact the hospital and initiate a Sepsis Alert if:
 - Suspected or documented Infection AND EITHER
 - Two or more of the following criteria are met:
 - Temp >100.4 °F (38°C) or <96.8°F (36°C)
 - RR >20 BPM
 - Heart Rate >90 bpm

OR

- Signs of hypoperfusion – SBP <90mmHg or MAP <65mmHg or ETCO2 <25
- Continuous cardiac, ETCO2, and pulse oximetry monitoring, when available
- Obtain a 12 Lead EKG when available

Treatment Plan

- Address the underlying cause of shock, if possible
- Administer oxygen as needed to keep oxygen saturations between 90-94%.
- Ensure patient warmth, resuscitate with warm IV fluids when available
- Pregnancy >20 weeks gestation - Transport in partial left lateral decubitus position. Place wedge-shaped cushion or multiple pillows under patient's right hip and shoulders to elevate R side 30-45 degrees
- Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90mmHg.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

AEMT

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- Vascular access
 - Insert 2 large bore IVs
- Traumatic Shock – Permissive Hypotension**
 - If SBP >80-90 (intact radial pulse):
 - No IV fluid bolus
 - Place saline locks on IVs or run at TKO rate
 - If SBP <80-90:
 - Give fluid bolus 500mL at a time, reassess and repeat as needed to:
 - Maintain SBP to 80-90 mmHg **WITHOUT** a CLOSED HEAD INJURY.
 - Maintain SBP to 110-120 mmHg **WITH** a CLOSED HEAD INJURY.
 - Once minimum blood pressures have been achieved the patient should have a saline lock and no further fluid boluses should be

- Vascular access
 - Insert 2 large bore IVs
- Traumatic Shock** – Give fluid bolus of NS 20 mL/kg at a time (max 1L) reassess and repeat up to a maximum of 60 mL/kg total (Max 3L); Reassess for reversal of the signs of shock
 - ⊙ If the patient remains hypotensive after 60mL/kg (max 3L) of NS call OLMC
- Non- Traumatic Shock** - Provide 20mL/kg (max 2 L) boluses up to a maximum of 60mL/kg and reassess for reversal of the signs of shock
 - ⊙ If the patient remains hypotensive after 60mL/kg (max 3L) of NS call OLMC
- Cardiogenic Shock** - In patients with CHF, pulmonary edema and cardiogenic shock, IV

administered unless the BP falls below the limits.

- ❑ **Non-Traumatic Shock** – Give IV NS bolus 500 ml at a time, reassess and repeat up to a maximum of 2 liters as required for reversal of signs of shock
- ⌚ Call OLMC if the patient remains hypotensive after 2 liters has been administered
- ❑ **Cardiogenic Shock** - In patients with CHF, pulmonary edema, and cardiogenic shock, IV fluids should be withheld, to avoid worsening shock
 - Rapidly transport to hospital
- ❑ **Kidney Failure (i.e. dialysis patients)** - Give 500mL fluid boluses up to a maximum of 1 liter and reassess for reversal of the signs of shock

PARAMEDIC

FOR USE ONLY IN NON-TRAUMATIC SHOCK

- ❑ **Epinephrine 2–10 mcg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg
- ❑ **Push Dose Epinephrine 10mcg** as needed to maintain a SBP >100 mmHg after fluid bolus
- ❑ **Norepinephrine** initial dose: **0.05 – 1 mcg/kg/min** IV/IO for hypoperfusion. Titrate to maintain a SBP > 100 mmHg. For patients in refractory shock: 8-30 mcg/minute. **(Agency Specific Option)**

fluids should be withheld, to avoid worsening shock

- Apply high-flow oxygen
- Rapidly transport to the hospital
- ❑ **Kidney Failure (i.e. dialysis patients)** - Give 10 mL/kg fluid boluses(max 500mL) up to a maximum of 20mL/kg (max 1L) and reassess for reversal of the signs of shock
- ⌚ Call OLMC if the patient remains hypotensive after 20 ml/kg has been administered

PARAMEDIC

FOR USE ONLY IN NON-TRAUMATIC SHOCK

- ⌚ **Epinephrine 0.1–1 mcg/kg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg
- ⌚ **Push Dose Epinephrine 1mcg/kg** as needed to maintain a SBP >70 + (age in years x 2) mmHg after fluid bolus
- ⌚ **Norepinephrine** initial dose: **0.05 - 0.1 mcg/kg/min**, titrate to max of 2 mcg/kg/min to maintain SBP >70 + (age in years x 2) mmHg **(Agency Specific Option)**