

# SHOCK & FLUID THERAPY

UPDATED 2/2024

## 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,
      - (Neurogenic shock may present with normotensive, bradycardia or normal heart rate)
      - SBP <70 + (age in years x 2) mmHg for children,
      - RR >20
    - Skin signs:
      - cold clammy skin, febrile, or delayed capillary refill
      - (Neurogenic shock may present with warm, flushed skin)
    - 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
- Continuous cardiac, ETCO<sub>2</sub>, and pulse oximetry monitoring
- 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 recumbent position. Place wedge-shaped cushion or multiple pillows under patient's right hip and shoulders to elevate right 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)
    - 10 years and older = 90mmHg.

## ADULT

### AEMT

- Vascular access
  - Insert 2 large bore IVs
- Traumatic Shock**
  - If SBP >90 or MAP >65:
    - No IV fluid bolus
    - Place saline locks on IVs or run at TKO rate
  - If SBP <90 or MAP <65:
    - Give fluid bolus 500mL at a time, reassess and repeat as needed:
      - Maintain SBP to 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, no further fluid boluses should be administered unless the BP falls below the limits.
- Non-Traumatic Shock** – Give IV NS or LR bolus 500 ml at a time, reassess and repeat up to a maximum of 1 liter
  - ☉ Call OLMC if the patient remains hypotensive after 1 liter 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 >90 mmHg or MAP of 65
- Push Dose Epinephrine 10mcg** as needed to maintain a SBP >90 mmHg or MAP of 65 after fluid bolus
- Norepinephrine** initial dose: **0.05 – 1 mcg/kg/min** IV/IO for hypoperfusion. Titrate to maintain a SBP > 90 mmHg or MAP of 65. For patients in refractory shock: 8- 30 mcg/minute. **(Agency Specific Option)**

## PEDIATRIC (<15 years of Age) NOTE: Pediatric weight based dosing should not exceed Adult dosing.

### AEMT

- Vascular access
  - Insert 2 large bore IVs
- Traumatic Shock**
  - Give fluid bolus of NS or LR 10 mL/kg at a time reassess and repeat up to a maximum of 20 mL/kg total (Max 500mL); Reassess for reversal of shock
    - ☉ If the patient remains hypotensive after 20mL/kg (max 500mL) of NS or LR call OLMC
- Non- Traumatic Shock** - Provide 20mL/kg boluses up to a maximum of 60mL/kg; Reassess for reversal of shock
  - ☉ If the patient remains hypotensive after 60mL/kg (max 500mL) of NS or LR call OLMC
- Cardiogenic Shock** - In patients with CHF, pulmonary edema, and cardiogenic shock, IV 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)**