



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

- Ectopic pregnancy
- Dysrhythmias
- Pulmonary embolus
- Tension pneumothorax
- Medication effect / overdose
- Vasovagal
- Physiologic (pregnancy)
- Sepsis

	Blood Glucose Analysis Procedure
B	12 Lead ECG Procedure
	IV or IO Access Protocol UP 6
P	Cardiac Monitor
	Airway Protocol(s) <i>if indicated</i>
	Diabetic Protocol AM 2 <i>if indicated</i>

TXA / Blood Product Indicators: V/S parameters for blunt/ penetrating trauma:

Adult:

- SBP ≤ 90 mmHg

Age ≥ 65

SBP < 100 mmHg + HR > 100

Peds:

- SBP $< \{70 + 2(\text{Age})\}$

History and Exam Suggest Type of Shock

Cardiogenic

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

SBP ≥ 90 mmHg

NO

YES

A

Normal Saline
Bolus 250 mL IV / IO
Repeat dose to effect SBP > 90
500 mL Maximum

P

Levophed
5 mcg/min IV / IO
Titrate to effect:
SBP ≥ 90 mmHg
MAP ≥ 65 mmHg

Hypovolemic

Allergy Protocol AM 1
if indicated
Suspected Sepsis Protocol UP 14
if indicated
Multiple Trauma Protocol TB 6
if indicated

A

Normal Saline
Bolus 500 mL IV / IO
Repeat to effect SBP > 90
2 L Maximum

P

Levophed
5 mcg/min IV / IO
Or
Epinephrine
1 – 10 mcg/min IV / IO
Titrate to effect:
SBP ≥ 90 mmHg
MAP ≥ 65 mmHg
See Page 2

Distributive

Obstructive

Chest Decompression-
Needle Procedure
if indicated

Vasopressor Choice Guidance

Epinephrine	Norepinephrine
ROSC: with Bradycardia	ROSC: with Tachycardia
Anaphylaxis	Cardiogenic Shock
Hypotension: with Bradycardia	Hypotension: with Tachycardia
Sepsis: with Bradycardia	Sepsis: with Tachycardia
Severe Asthma	Tachycardia > 120
Severe COPD	

Notify Destination or
Contact Medical Control



Hypotension/ Shock



Tranexamic Acid (TXA)

- **Administer 2 gm over 10 minutes**
- Infuse during transport only, unless patient entrapped and can be administered without slowing extrication.

Push-Dose Vasopressors:

- **Epinephrine:** Mix 1:1000 (1mg in 1mL) into 1000 mL of NS or LR.
- **Norepinephrine:** Mix 1 mg into 1000 mL of NS or LR
- Yields a concentration of 1 mcg/mL of Epinephrine or Norepinephrine.
- **Give 5 – 10 mcg every 2 – 3 minutes** to effect SBP \geq 90 and/or MAP of \geq 65 mmHg.
- Use push-dose vasopressors, in conjunction with fluid resuscitation, with RSI procedure when hypotensive.
- Use push-dose vasopressors with hypotension unresponsive to fluid resuscitation.
- Use push-dose vasopressor as you are setting up a Epinephrine or Levophed drip.
- If patient requires \geq 2 push dose vasopressors, start vasopressor infusion.

Epinephrine and Norepinephrine DRIP

1 mg of drug in 1000 mL NS or LR
(1 mcg / mL)
10 drop set

Dose	gtts / min
1 mcg/min	10 gtts/min
2 mcg/min	20 gtts/min
3 mcg/min	30 gtts/min
4 mcg/min	40 gtts/min
5 mcg/min	50 gtts/min
6 mcg/min	60 gtts/min
7 mcg/min	70 gtts/min
8 mcg/min	80 gtts/min
9 mcg/min	90 gtts/min
10 mcg/min	100 gtts/min

Levophed:

If patient requires \geq 2 push dose vasopressors or has suspected sepsis, initiate Levophed drip.

Levophed 5 mcg/min IV / IO and titrate by **2 mcg/min every 2 – 3 minutes** to effect SBP \geq 90mmHg and/or MAP \geq 65 mmHg.

Pearls

- **Recommended Exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- Hypotension is defined as a systolic blood pressure less than 90. This is not always reliable and should be interpreted in context and consider patient's typical BP if known.
- Shock may be present with a normal blood pressure initially or even elevated blood pressure.
- Shock is often 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, ruptured aortic aneurysm or pregnancy-related bleeding.

Tranexamic Acid (TXA):

Agencies utilizing TXA must submit letters from the 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 ventricular / septum / valve / toxins.

• Distributive Shock:

Sepsis/ Anaphylactic/ Neurogenic/ Toxins

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.