



# 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

Norepinephrine: 4mg in 4mL mixed in NS 1000mL = 4mcg/mL

Infusion Rate	10 drops/mL Set	60 drops/mL Set
2 mcg/min	5 drops/min	30 drops/min
4 mcg/min	10 drops/min	60 drops/min
6 mcg/min	15 drops/min	90 drops/min
8 mcg/min	20 drops/min	120 drops/min
10 mcg/min	25 drops/min	150 drops/min
12 mcg/min	30 drops/min	180 drops/min
14 mcg/min	35 drops/min	210 drops/min
16 mcg/min	40 drops/min	240 drops/min
18 mcg/min	45 drops/min	270 drops/min
20 mcg/min	50 drops/min	300 drops/min

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

**Blood Product Indicators**

Visual evidence of large volume blood loss and/or

**Adult**  
SBP ≤ 70 or SBP ≤ 90 + HR >110

**Age > 65**  
SBP ≤ 90 + HR >110

**Peds:**  
SBP ≤ 70 + (2 x Age)

History and Exam Suggest Type of Shock

**Cardiogenic**

**Distributive**

**Hypovolemic**

**Obstructive**

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

Allergy Protocol AM 1  
*if indicated*

Multiple Trauma Protocol TB 6  
*if indicated*

Suspected Sepsis Protocol UP 15  
*if indicated*

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

**\*\* If Available \*\***

**A** Normal saline Bolus 500 - 2000 mL IV  
As clinically indicated  
Repeat to effect - SBP > 90  
2 L Maximum

**P** IF MAP <60 or SBP <80 consider early pressors with fluid resuscitation

Epinephrine Push Dose 10 mcg q 2-5 min IV/IO  
Norepinephrine Push Dose 8-16 mcg q 2-5 min IV/IO

Norepinephrine 2 - 20 mcg / minute IV / IO

SUSPECTED BLEEDING ?

**P** If Suspected Hemorrhagic Shock

Low Titer O+ Whole Blood Administration Procedure WTP-9

Whole Blood 1 Unit (500 mL) IV / IO  
May repeat x1 if indicated

Followed by  
2 g Calcium Gluconate IV / IO  
If Calcium Gluconate unavailable:  
1 g Calcium Chloride over 3-5 minutes

**Notify Destination or Contact Medical Control**



# Hypotension / Shock

If Available Whole blood transfusion requires 20 gauge or larger IV / IO access, and agency-approved blood tubing and warmer.  
Refer to Low Titer O+ Whole Blood Procedure WTP – 9.  
May repeat x1 if no improvement after 500ml of whole blood.

**Remember Push Dose Pressors effects are temporary – if more than 2 doses are needed switch to the Norepi or Epi drips**

Norepinephrine: Place 4 mg Norepinephrine in 250 mL NS (16 mcg / mL concentration).  
Administer via IV Pump at 8 – 38 mL/Hour. If using 60 drop set this equals 8 – 38 drips per minute.

	Infusion	Push-dose syringe
<b>EPINEPHRINE</b>	<b>Preparation:</b>	<b>Preparation:</b>
	<input type="checkbox"/> Add 4 mg epinephrine 1:1,000 to 250 mL bag of Normal Saline <b>Yields Epinephrine concentration of 16 mcg / mL</b>	<input type="checkbox"/> Draw up 9 mL Normal Saline in 10 cc syringe <input type="checkbox"/> Add the 1 mL epinephrine 1:10,000 <b>Yields Epinephrine concentration of 10 mcg / mL</b>
	<input type="checkbox"/> Label the bag	<input type="checkbox"/> Label the syringe
	<b>Administration:</b> (1 – 10 mcg / min epinephrine) <b>IV Infusion Pump:</b> 4 – 38 mL / Hour  <b>60 gtts / mL tubing:</b> 4 – 40 drips per minute	<b>Administration:</b> <b>Push-Dose Epinephrine</b> <input type="checkbox"/> Administer 1 mL (10 mcg epinephrine)

Agencies may utilize other forms/concentrations if approved by the Dr Koontz

## 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.

### 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.

### Adults patients:

Methylprednisolone 125 mg IM / IV / IO or

Hydrocortisone 100mg IM / IV / IO

Use steroid agent specific to your drug list. Dexamethasone 10 mg IM / IV / IO can be used if only alternative

### Pediatric patients:

Methylprednisolone 2 mg/kg IM / IV / IO (Maximum 125 mg) or

Hydrocortisone 2mg/kg IM / IV / IO (Maximum 100mg)

Use steroid agent specific to your drug list. Dexamethasone 5 mg IM / IV / IO can be used if only alternative

May administer prescribed steroid carried by patient IM / IV / IO. Patient may have Hydrocortisone (Cortef or Solu - Cortef). Administer 2 mg/kg up to 100 mg IV or dose specified by patient's physician.