



# 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

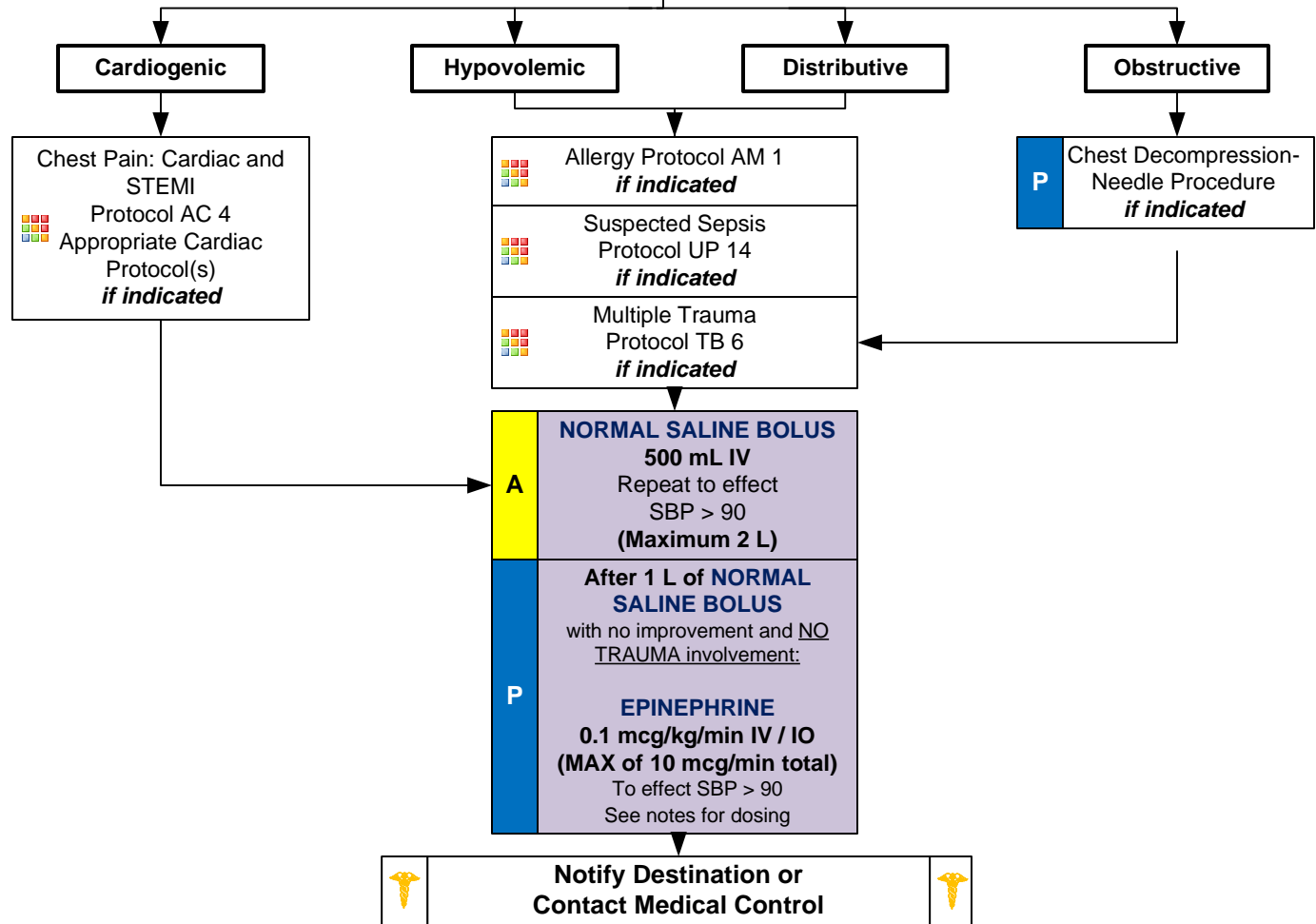
- Restlessness, confusion
- Weakness, dizziness
- Weak, rapid pulse
- Pale, cool, clammy skin
- Delayed capillary refill
- Hypotension
- Coffee-ground emesis
- Tarry stools

## Differential

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

	Blood Glucose Analysis Procedure
<b>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>

History and Exam Suggest Type of Shock



Adult Medical Protocol Section



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## EPINEPHRINE DRIP INSTRUCTIONS:

\* 1 mg of Epinephrine = 1 mL of Epinephrine 1:1,000 \*  
 For precise dosing, remove 1 mL of Normal Saline from a 1 L bag  
 Inject 1 mg of Epinephrine 1:1,000 into the 1 L of Normal Saline  
 This results in a **1 mcg/mL** concentration  
 Reminder: Standard unit conversion: **dose (mg/mL) x 1000 (mcg/mg) = dose (mcg/mL)**

Calculation formula for **WEIGHT** based dosing:

$$\frac{\text{desired dose (mcg/kg)} \times \text{weight (kg)} \times \text{drop set (10 gtt/mL)}}{\text{concentration (1 mcg/mL)}} = \text{gtt/min}$$

**UTILIZE 10 GTT SET IV TUBING FOR ADULTS**

**\* REFER TO DRUG CARDS FOR ADDITIONAL INFORMATION AND PRE-CALCULATED DRIP RATES \***

Contact Medical Control for Epinephrine drip dosing guidance **if needed**.

## 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.**



# HYPOTENSION / SHOCK

## EPINEPHRINE CONCENTRATION (1 mcg/mL) 0.1 mcg/kg/min

$$(0.1 \text{ mcg/kg}) \times (\text{kg}) \times (60 \text{ gtt}) \div 1 \text{ mcg/mL}$$

$$(0.1 \text{ mcg/kg}) \times (\text{kg}) \times (10 \text{ gtt}) \div 1 \text{ mcg/mL}$$

PATIENT WEIGHT (kg)	USING 60 gtt SET ( $\leq 20$ kg)	PATIENT WEIGHT (kg)	USING 10 gtt SET ( $> 20$ kg)
	# gtt/min		# gtt/min
3	18	22	22
4	24	24	24
5	30	26	26
6	36	28	28
7	42	30	30
8	48	32	32
9	54	34	34
10	60	36	36
11	66	38	38
12	72	40	40
13	78	42	42
14	84	44	44
15	90	46	46
16	96	48	48
17	102	50	50
18	108	60	60
19	114	70	70
20	120	80	80
		90	90
		100	100 – MAX DOSE