

# Epinephrine

**Indications:** Cardiac arrest, Bradycardia, Allergic reaction or Anaphylaxis, Respiratory distress with presumed bronchospasm, Uncontrollable external hemorrhage

**Contraindications:** None in the emergency setting

**1: 1,000 Concentration: 1 mg/mL | 1:10,000 Concentration: 0.1 mg/mL | 1:100,000 Concentration 10 mcg/mL**

## ADULT DOSING

Indication	Dose	Rate & Route	Note
Cardiac Arrest	1 mg 1:10,000 <b>10 mL</b>	IV/IO q 8 min	
Non-hemorrhagic Hypotension – or – Bradycardia	20 mcg 1:100,000 <b>2 mL</b>	IV/IO q 5 min PRN	Titrate to MAP > 65
	2 – 20 mcg/min	IV Infusion	
Anaphylaxis – or – Respiratory Distress	0.3 mg 1:1,000 <b>0.3 mL</b>	IM	May repeat every 5 minutes up to total 1.2 mg May assist with prescribed Epi Pen
	2 mg 1:1,000	Nebulizer	2 mg (2 mL) of 1:1,000 mixed with 1 ml NS
	2 – 20 mcg/min	IV/IO Infusion	Titrate to respiratory and circulatory effect
Uncontrollable external hemorrhage	1 mg 1:1,000	Topical	Dental or wound. For Epistaxis, topical or IN atomizer
		Nebulizer	Tonsil, mix 1 mL into 2.5 ml NS

## ADULT DOSING

## PEDIATRIC DOSING

Indication	Dose	Rate & Route	Note
Cardiac Arrest	0.01 mg/kg 1:10,000 Max dose: 1 mg	IV/IO q 4 min	
Bradycardia	0.01 mg/kg 1:10,000 Max dose: 1 mg	IV/IO	<b>Contact OLMC for repeat IVP doses</b>
	0.1 – 1 mcg/kg/min	IV/IO Infusion	
Hypotension	0.1 – 1 mcg/kg/min	IV/IO Infusion	<b>OLMC Required</b>
Anaphylaxis BLS PROVIDERS	If 8 to 29.9 kg then 0.15 mg	IM	<b>Contact OLMC for repeat IM doses</b> <b>Do not administer if &lt; 8 kg (17 lbs)</b> May assist with prescribed Epi Pen
	If ≥ 30 kg then 0.3 mg	IM	
Anaphylaxis ALS PROVIDERS	0.01 mg/kg 1:1,000 Max dose: 0.3 mg	IM	
	0.1 – 1 mcg/kg/min	IV/IO Infusion	
Respiratory Distress Strider/Barking – or – < 2 Y/O with bronchiolitis	0.01 mg/kg 1:1,000 Max dose: 0.3 mg	IM	<b>Contact OLMC for repeat IM doses</b>
	0.5 mg	Nebulizer	0.5 mg 1:1,000 mixed with 4 ml NS – or – 0.5 mg of 1,10:000

## PEDIATRIC DOSING

<b>Pediatric Dosing Epinephrine</b>										
3 kgs	4kgs	5 kgs	6-7 kgs	8-9 kgs	10-11 kgs	12-14 kgs	15-18 kgs	19-23 kgs	24-29 kgs	30-36 kgs
6.6 lbs	8.8 lbs	11 lbs	13-15 lbs	17-20 lbs	22-24 lbs	26-30 lbs	33-40 lbs	42-50 lbs	53-64 lbs	66-80 lbs
in18.25-20.25	in20.25-21.5	in21.5-23.25	in23.25-26.25	in26.25-29.25	in29.25-33	in33-37.5	in37.5-42.5	in42.5-47.75	in47.75-51.25	in51.25-56.25
<b>Epinephrine 1:1,000</b> Concentration = 1 mg/ml										
None	None	None	None	0.1 mL	0.1 mL	0.1 mL	0.2 mL	0.2 mL	0.3 mL	0.3 mL
<b>Epinephrine 1:10,000</b> Concentration = 0.1 mg/ml										
0.5 mL	0.5 mL	0.5 mL	0.5 mL	1 mL	1 mL	1.5 mL	2 mL	2 mL	3 mL	3 mL

**Adverse/Side Effects**

Palpitations, anxiety, tremulousness, headache, dizziness, nausea, vomiting, increased myocardial oxygen demand

**Class**

Sympathetic Agonist. Epinephrine is a naturally occurring catecholamine. It is a potent alpha- and beta-adrenergic stimulant with more profound beta effects.

**Mechanism of Action**

Epinephrine works directly on alpha- and beta-adrenergic receptors with effects of increased heart rate, cardiac contractile force, increased electrical activity in the myocardium, increased systemic vascular resistance, increased blood pressure, and increased automaticity. It also causes bronchodilation.

**Onset of Action**

< 1 minute

**Peak Effect**

Minutes

**Duration of Action**

Varies

## Epinephrine Infusion and Dosing Volume

### ADULT DOSING

<b>Step 1:</b> Determine concentration and prepare medication.	Epi 1 mg/ml (1:1,000)	Mix 2 mg of Epi 1 mg/ml in 250 ml NS, thus creating Epi 8 mcg/ml								
<b>Step 2:</b> Use 60 gtts set and determine infusion rate										
Dose in mcg/min	2 mcg	4 mcg	6 mcg	8 mcg	10 mcg	12 mcg	14 mcg	16 mcg	18 mcg	20 mcg
Drops per minute	15 gtts	30 gtts	45 gtts	60 gtts	75 gtts	90 gtts	105 gtts	120 gtts	135 gtts	150 gtts

### ADULT DOSING

### PEDIATRIC DOSING

<b>Step 1:</b> Determine concentration and prepare medication.	Epi 1 mg/ml (1:1,000)									
3 kg	4 kg	5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
0.2 ml	0.3 ml	0.4 ml	0.5 ml	0.7 ml	0.8 ml	1 ml	1.3 ml	1.7 ml	2 ml	2.6 ml
Mix the ml amount of Epi 1 mg/ml appropriate for the patient's weight into 250 ml NS <div style="text-align: right; font-size: small;">Calculated based on Patient kg x 0.08 = ml Epi added to 250 ml NS</div>										
<b>Step 2:</b> Use 60 gtts set and determine infusion rate										
Dose in mcg/kg/min	0.1 mcg	0.2 mcg	0.3 mcg	0.5 mcg	0.7 mcg	0.8 mcg	0.9 mcg	1.0 mcg		
Drops per minute	19 gtts	38 gtts	56 gtts	94 gtts	131 gtts	150 gtts	169 gtts	188 gtts		

### PEDIATRIC DOSING