**Medical Control Guideline: DRUG REFERENCE – EPINEPHRINE**

**Classification**
Sympathomimetic

**Prehospital Indications**

**Anaphylaxis**
Cardiac Arrest – Non-Traumatic: cardiac arrest resuscitation, hypotension after return of spontaneous circulation (ROSC) not responsive to IV fluid resuscitation
Cardiac Dysrhythmia: symptomatic bradycardia not responsive to atropine and transcutaneous pacing
Respiratory Distress / Bronchospasm: asthma, reactive bronchospasm (unlikely to benefit in COPD)
Airway Obstruction: stridor or visible airway swelling, croup/tracheitis in pediatrics
Shock / Hypotension: non-traumatic hypotension not responsive to IV fluid resuscitation

**Adult Dose**

**Anaphylaxis**
0.5mg (1mg/mL) IM in the lateral thigh, may repeat every 10 min x2 prn, maximum total 3 doses

**Cardiac Arrest**
1mg (0.1mg/mL) 10mL IV/IO every 3-5 min

Non-traumatic shock (including from symptomatic bradycardia or after ROSC)

**Push-dose epinephrine** – mix 9mL normal saline with 1mL epinephrine 0.1mg/mL (IV formulation) in a 10mL syringe. Administer push-dose epinephrine 1mL IV/IO every 1-5 min as needed to maintain SBP >90mmHg

**Respiratory Distress/Bronchospasm**
0.5mg (1mg/mL) IM in the lateral thigh

**Airway Obstruction – Stridor**

**Epinephrine (1mg/mL solution) administer 5mg (5mL) via neb**, repeat x1 in 10 min prn

**Airway Obstruction – Airway swelling**

**Epinephrine (1mg/mL administer 0.5mg (0.5mL) IM**, repeat every 10 min prn x2, maximum total 3 doses

**Pediatric Dose**

**Anaphylaxis**
0.01mg/kg (1mg/mL) IM, dose per **MCG 1309**, in the lateral thigh, may repeat every 10 min x2 prn for persistent symptoms, maximum total 3 doses

**Cardiac Arrest**
0.01mg/kg (0.1mg/mL) IV/IO, dose per **MCG 1309**, may repeat every 3-5 min, maximum single dose 1mg

**Cardiac Dysrhythmia - Symptomatic bradycardia**
0.01mg/kg (0.1mg/mL) slow IV/IO push, dose per **MCG 1309**

**Shock / Hypotension (including hypotension after ROSC)**

**Push-dose epinephrine** – mix 9mL normal saline with 1mL epinephrine (0.1mg/mL) IV formulation in a 10mL syringe. Administer push-dose epinephrine (0.01mg/mL), dose per **MCG 1309** every 1-5 min as needed to maintain SBP >70mmHg

**Respiratory Distress/Bronchospasm**

**Epinephrine (1mg/mL) 0.01mg/kg IM** in the lateral thigh, dose per **MCG 1309**

**Airway obstruction – Stridor from croup/tracheitis**

<1 year old: **Epinephrine (1mg/mL) 2.5mL via neb**, dose per **MCG 1309**

≥ 1 year of age: **Epinephrine (1mg/mL) 5mL via neb**, dose per **MCG 1309**

Repeat x1 in 10 min prn, maximum 2 total doses prior to Base contact

**Airway obstruction - Airway swelling**

**Epinephrine (1mg/mL) 0.01mg/kg IM** dose per **MCG 1309**, repeat every 10 min prn x2, maximum 3 total doses prior to Base contact

**Mechanism of Action**
A naturally occurring catecholamine. Acts directly on alpha and beta adrenergic receptors. It is the most potent activator of alpha receptors vasoconstricting the aorta and peripheral vasculature. Beta 1 stimulation increases inotropy, chronotropy, and AV conduction. Beta 2 stimulation causes bronchial smooth muscle relaxation and vasodilation to internal organs and skeletal muscles.

**Pharmacokinetics**

Onset is < 2 min IV, 1-3 min IM; duration is 5-10 min IV, 20-30 min IM

**Contraindications**

None

**Interactions**

Can be partially deactivated by highly alkaline solutions, such as sodium bicarbonate.

**Adverse Effects**

Anxiety
CVA or MI (rare, IV only)
Hypertension
Palpitations
Tachydysrhythmias
Tremors

**Prehospital Considerations**

- Inadvertent IV injection of usual IM formulation and dose constitutes a 10-fold overdose that can result in sudden severe hypertension and possible cerebral hemorrhage.