

ADRENALIN

Class: alpha- and beta-adrenergic agonists (sympathomimetic agents).

Indications:

Treatment of bronchospasms, bronchial asthma, viral croup, anaphylactic reactions, cardiac arrest; added to local anesthetics to decrease systemic absorption of intraspinal and local anesthetics and increase duration of action; decrease superficial hemorrhage; induction and maintenance of mydriasis during intraocular surgery

Unlabeled : ACLS guidelines: Ventricular fibrillation (VF) or pulseless ventricular tachycardia (VT) unresponsive to initial defibrillatory shocks; pulseless electrical activity; asystole; hypotension/shock unresponsive to volume resuscitation; symptomatic bradycardia unresponsive to atropine or pacing; inotropic support.

Dosage:

- Asystole/pulseless arrest, pulseless VT/VF (ACLS, 2010):

-I.V., I.O.: 1 mg every 3-5 minutes until return of spontaneous circulation; if this approach fails, higher doses of epinephrine (up to 0.2 mg/kg) have been used for treatment of specific problems (eg, beta-blocker or calcium channel blocker overdose)

-Endotracheal: 2-2.5 mg every 3-5 minutes until I.V./I.O access established or return of spontaneous circulation; dilute in 5-10 mL NS or sterile water. Note: Absorption may be greater with sterile water (Naganobu, 2000). May cause false-negative reading with exhaled CO₂ detectors; use second method to confirm tube placement if CO₂ is not detected (Neumar, 2010).

-Bradycardia (symptomatic; unresponsive to atropine or pacing): I.V. infusion: 2-10 mcg/minute or 0.1-0.5 mcg/kg/minute (7-35 mcg/minute in a 70 kg patient); titrate to desired effect (ACLS, 2010)

-Bronchodilator: SubQ: 0.3-0.5 mg (1:1000 [1 mg/mL] solution) every 20 minutes for 3 doses

-Nebulization: S2 (racepinephrine, OTC labeling):

-Hand-bulb nebulizer: Add 0.5 mL (~10 drops) to nebulizer; 1-3 inhalations up to every 3 hours if needed

-Jet nebulizer: Add 0.5 mL (~10 drops) to nebulizer and dilute with 3 mL of NS; administer over ~15 minutes every 3-4 hours as needed

-Inhalation: Primatene Mist (OTC labeling): One inhalation, wait at least 1 minute; if not relieved, may use once more. Do not use again for at least 3 hours.

-Hypersensitivity reaction (eg, anaphylaxis): Note: SubQ administration results in slower absorption and is less reliable. I.M. administration in the anterolateral aspect of the middle third of the thigh is preferred in the setting of anaphylaxis (ACLS guidelines, 2010; Kemp, 2008).

-I.M., SubQ: 0.2-0.5 mg (1:1000 [1 mg/mL] solution) every 5-15 minutes in the absence of clinical improvement (ACLS 2010; Kemp, 2008; Lieberman, 2010). If clinician deems appropriate, the 5-minute interval between injections may be shortened to allow for more frequent administration (Lieberman, 2010).

-I.V.: 0.1 mg (1:10,000 [0.1 mg/mL] solution) over 5 minutes; may infuse at 1-4 mcg/minute to prevent the need to repeat injections frequently or may initiate with an infusion at 5-15 mcg/minute (with crystalloid administration) (ACLS, 2010; Brown, 2004). In general, I.V. administration should only be done in patients who are profoundly hypotensive or are in cardiopulmonary arrest refractory to volume resuscitation and several epinephrine injections (Lieberman, 2010).

-Self-administration following severe allergic reactions (eg, insect stings, food): Note: The World Health Organization (WHO) and Anaphylaxis Canada recommend the availability of one dose for every 10-20 minutes of travel time to a medical emergency facility. More than 2 sequential doses should only be administered under direct medical supervision.

-AdrenaClick: I.M., SubQ: 0.3 mg

-Auvi-Q: I.M., SubQ: 0.3 mg; if anaphylactic symptoms persist, dose may be repeated

-EpiPen: I.M., SubQ: 0.3 mg; if anaphylactic symptoms persist, dose may be repeated in 5-15 minutes using an additional EpiPen

-Twinject: I.M., SubQ: 0.3 mg; if anaphylactic symptoms persist, dose may be repeated in 5-15 minutes using the same device after partial disassembly

-Hypotension/shock, severe and fluid resistant (unlabeled use): I.V. infusion: Initial: 0.1-0.5 mcg/kg/minute (7-35 mcg/minute in a 70 kg patient); titrate to desired response (ACLS, 2010)

-Mydriasis during intraocular surgery, induction and maintenance: Intraocular: Must dilute 1:1000 (1 mg/mL) solution to a concentration of 1:100,000 to 1:1,000,000 (10 mcg/mL to 1 mcg/mL) prior to intraocular use: May use as an irrigation solution as needed during the procedure or may administer intracamerally (ie, directly into the anterior chamber of the eye) with a bolus dose of 0.1 mL of a 1:100,000 to 1:400,000 (10 mcg/mL to 2.5 mcg/mL) dilution.

Renal Impairment :

No dosage adjustment provided in manufacturer's labeling.

Hepatic Impairment :

No dosage adjustment provided in manufacturer's labeling.

Available dosage form in the hospital: ADRENALIN INJ. 1MG

Common side effect: Frequency not defined.

Cardiovascular: Angina, cardiac arrhythmia, chest pain, flushing, hypertension, pallor, palpitation, sudden death, tachycardia (parenteral), vasoconstriction, ventricular ectopy, ventricular fibrillation

Central nervous system: Anxiety (transient), apprehensiveness, cerebral hemorrhage, dizziness, headache, insomnia, lightheadedness, nervousness, restlessness

Gastrointestinal: Dry throat, loss of appetite, nausea, vomiting, xerostomia

Genitourinary: Acute urinary retention in patients with bladder outflow obstruction

Neuromuscular & skeletal: Tremor, weakness

Ocular: Allergic lid reaction, burning, corneal endothelial damage (intraocular use), eye pain, ocular irritation, precipitation of or exacerbation of narrow-angle glaucoma, transient stinging

Respiratory: Dyspnea, pulmonary edema. Miscellaneous: Diaphoresis

Pregnancy Risk Factor: C