 Phenylephrine hydrochloride (fen-ill-EF-rin)

CLASSIFICATION(S): Sympathomimetic

PREGNANCY CATEGORY: C


SEE ALSO SYMPATHOMIMETIC DRUGS, CHAPTER 2.

USES

Parenteral: (1) Maintenance of an adequate level of BP during spinal and inhalation anesthesia. (2) Treatment of vascular failure in shock, shock-like states, drug-induced hypotension, or hypersensitivity. (3) To overcome paroxysmal SVT. (4) Prolong spinal anesthesia. (5) Vasoconstrictor in regional anesthesia.

Oral: (1) Temporary relief of nasal congestion due to the common cold, hay fever, or other upper respiratory allergies. (2) Nasal congestion associated with sinusitis. (3) Promote nasal or sinus drainage.

Nasal: Nasal congestion due to allergies, sinusitis, common cold, hay fever, or other upper respiratory allergies.

Ophthalmic, 0.12%: Temporary relief of redness of the eye associated with colds, hay fever, wind, dust, sun, smoke, smoke, contact lens and as a lubricant to prevent further irritation or to relieve dryness of the eye.

Ophthalmic, 2.5% and 10%: (1) Decongestant, mydriatic, and vasoconstrictor. (2) Pupillary dilation in uveits to prevent or aid in the disruption of posterior synechia formation. (3) Open-angle glaucoma. (4) Refraction without cycloplegia, ophthalmoscopic examination, fundoscopy, prior to surgery (2.5%).

ACTION/KINETICS

Action

Stimulates alpha-adrenergic receptors (with little or no effect on beta receptors in the heart), producing pronounced vasoconstriction and hence an increase in both SBP and DBP; reflex bradycardia results from increased vagal activity. Also acts on alpha receptors producing vasoconstriction in the skin, mucous membranes, and the mucosa, as well as mydriasis by contracting the dilator muscle of the pupil. Resembles epinephrine, but it has more prolonged action and few cardiac effects.

Pharmacokinetics

IV, Onset: immediate; duration: 15–20 min. IM, SC, Onset: 10–15 min; duration: 0.5–2 hr for IM and 50–60 min for SC. Nasal decongestion (topical), Onset: 15–20 min; duration: 30 min–4 hr. Ophthalmic, time to peak effect for mydriasis: 15–60 min for 2.5% solution and 10–90 min for 10% solution. Duration: 0.5–1.5 hr for 0.12%, 3 hr for 2.5%, and 5–7 hr with 10% (when used for mydriasis). Excreted in urine.

CONTRAINDICATIONS

Parenteral use in severe hypertension, VT. Use as a decongestant in children less than 6 years of age. Ophthalmic, 10%, in infants and 2.5% in low-birth weight neonates and infants; also, ophthalmic use in those with anatomically narrow angles or narrow-angle glaucoma.

SPECIAL CONCERNS

• Use with extreme caution in geriatric clients, severe arteriosclerosis, brady- cardia, partial heart block, myocardial disease, hyperthyroidism and during pregnancy and lactation.

• Systemic absorption with nasal or ophthalmic use.

• Use of the 2.5% or 10% ophthalmic solutions in children may cause hypotension and irregular heart beat.

• In geriatric clients, chronic use of the 2.5% or 10% ophthalmic solutions
may cause rebound miosis and a decreased mydriatic effect.

SIDE EFFECTS
Most Common
When used parenterally: Headache, reflex bradycardia, excitability, restlessness.

When used for nasal decongestion: Burning/stinging/dryness inside of nose, headache, dizziness.

When used ophthalmically: Blurred vision, stinging on instillation, mydriasis, increased redness/irritation, lacrimation.

Parenteral use: Reflex bradycardia, arrhythmias (rare), headache, excitability, restlessness. Nasal use: Burning/stinging/dryness inside of nose, headache, dizziness, insomnia, nervousness, increased runny/stuffy nose, increased sweating, tremor, paleness, fast/irregular/pounding heart beat.

Ophthalmic use: Rebound miosis and decreased mydriatic response in geriatric clients, blurred vision, stinging on instillation, mydriasis, increased redness, irritation, discomfort, blurring, punctuate keratitis, lacrimation, increased intraocular pressure, transient pigment floaters in older clients in the aqueous humor 30 to 45 min after instillation, rebound miosis and decreased mydriatic response in older clients. The 10% solution may cause serious CV reactions, including ventricular arrhythmias and MI.

ADDITIONAL DRUG INTERACTIONS
Anesthetics, halogenated hydrocarbon / May sensitize myocardium → serious arrhythmias; includes ophthalmic use Atropine / Concomitant ophthalmic use → ↑ pressor effects of phenylephrine and cause tachycardia Bretylium / ↑ Effect of phenylephrine → possible arrhythmias Guanethidine / Possible ↑ pressor effect of phenylephrine → severe hypertension, including phenylephrine ophthalmic use MAO inhibitors / Ophthalmic use with or up to 21 days after discontinuing MAOIs → exaggerated adrenergic effects or a severe hypertensive crisis Metyldopa / Coadministration ophthalmically → potentiation of phenylephrine pressor effects

Oxytocic drugs / Possible severe persistent hypertension Tricyclic antidepressants / Possible ↑ or ↓ sensitivity to IV phenylephrine; phenylephrine ophthalmic use → potentiation of pressor response

OD OVERDOSE MANAGEMENT
Symptoms: Ventricular extrasystoles, short paroxysms of ventricular tachycardia, sensation of fullness in the head, tingling of extremities. Treatment: Administer an alpha-adrenergic blocking agent (e.g., phentolamine).

HOW SUPPLIED
Nasal Solution: Drops/Spray: 0.125%, 0.25%, 0.5%, 1%.
Oral: Strips: 10 mg; Tablets: 10 mg; Tablets, Chewable: 14 mg total (10 mg hydrochloride and 4 mg base).
Ophthalmic: Solution: 0.12%, 2.5%, 10%.
Parenteral: Injection: 1% (10 mg/mL).

DOSAGE
• IM; IV; SC

Vasopressor, mild to moderate hypotension.

Adults: 2–5 mg (range: 1–10 mg) IM or SC, not to exceed an initial dose of 5 mg repeated no more often than q 10–15 min; or, 0.2 mg (range: 0.1–0.5 mg) IV, not to exceed an initial dose of 0.5 mg repeated no more often than q 10–15 min. NOTE: A 5 mg IM dose should raise BP for 1–2 hr; a 0.5 mg IV dose should raise BP for about 15 min.

Pediatric: 0.1 mg/kg (3 mg/m²) IM or SC repeated in 1–2 hr if needed.

Vasopressor, severe hypotension and shock (including drug-related hypotension).

Correct blood volume before any vasopressor is given. Adults, initial: 10 mg (1 mL of 1% solution) added to 500 mL dextrose injection or NaCl injection. To raise BP quickly, start the infusion at about 100 mcg/min to 180 mcg/min (based on 20 gtt/mL; this is 100–180 gtt/min) by continuous IV infusion. If a prompt initial response is not obtained, additional increments of 10 mg or more are added to the infusion bottle. Adjust the rate of flow until the desired BP is obtained. Avoid hypertension.

Prophylaxis and treatment of hypotension during spinal anesthesia.
Adults: 2–3 mg IM or SC 3–4 min before anesthetic given; subsequent doses should not exceed the previous dose by more than 0.1–0.2 mg. No more than 0.5 mg should be given in a single dose. Pediatric: 0.044–0.088 mg/kg IM or SC.

- Hypotensive emergencies during spinal anesthesia.

- Adults, initial: 0.2 mg IV; dose can be increased by no more than 0.1–0.2 mg for each subsequent dose not to exceed 0.5 mg/dose.

- Prolongation of spinal anesthesia.

  2–5 mg added to the anesthetic solution increases the duration of action up to 50% without increasing side effects or complications.

- Vasoconstrictor for regional anesthesia.

  Add 1 mg to every 20 mL (1:20,000 of phenylephrine) of local anesthetic solution. If more than 2 mg phenylephrine is used, pressor reactions can be expected.

- Paroxysmal SVT.

  Initial: 0.5 mg (maximum) given by rapid IV injection (over 20–30 seconds). Subsequent doses are determined by BP and should not exceed the previous dose by more than 0.1–0.2 mg and should never be more than 1 mg.

- NASAL DROPS; NASAL SPRAY

  Adults and children over 12 years of age: 2–3 gtt of the 0.25% or 0.5% solution into each nostril q 3–4 hr as needed. In resistant cases, the 1% solution can be used but no more often than q 4 hr.

  Children, 6–12 years of age: 2–3 gtt of the 0.25% solution not more often than q 4 hr.

  Children, 2–less than 6 years of age: Do not use.

- STRIPS

  Decongestant.

  Adults: 1 strip (10 mg) q 4 hr, up to 6 strips/day. Children, <12 years of age: Check with provider.

- TABLETS, CHEWABLE; TABLETS, ORAL DISINTEGRATING

  Nasal congestion.

  Adults: 1–2 tablets (10–20 mg) q 4 hr.

  Children, 6 to <12 years of age: 1 tablet (10 mg) q 4 hr.

- OPHTHALMIC SOLUTION, 0.12%

  Minor eye irritations.

  1–2 gtt of the 0.12% solution in the eye(s) up to 4 times per day as needed.

- OPHTHALMIC SOLUTION, 2.5%, 10%

  Vasoconstriction, pupillary dilation.

  1 gtt of the 2.5% or 10% solution on the upper limbus a few minutes following 1 gtt of topical anesthetic (prevents stinging and dilution of solution by lacrimation). An additional drop may be needed 1 hr after the use of a topical anesthetic.

  Uveitis.

  1 gtt of the 2.5% or 10% solution with atropine. To free recently formed posterior synechiae, 1 gtt of the 2.5% or 10% solution to the upper surface of the cornea; dose may be repeated as needed, but not to exceed three applications. Continue treatment the following day, if needed. In the interim, apply hot compresses for 5–10 min 3 times per day using 1 gtt of 1% or 2% atropine sulfate solution before and after each series of compresses.

- Glaucoma.

  Paroxysmal SVT.

  Initial: 0.5 mg (maximum) given by rapid IV injection (over 20–30 seconds). Subsequent doses are determined by BP and should not exceed the previous dose by more than 0.1–0.2 mg and should never be more than 1 mg.

  Minor eye irritations.

  1–2 gtt of the 0.12% solution in the eye(s) up to 4 times per day as needed.

- Ophthalmoscopic examination.

  1 gtt of 2.5% solution in each eye. The eyes are ready for examination in 15–30 min and the effect lasts for 1–3 hr.
**NURSING CONSIDERATIONS**

- Do not confuse Sudafed PE (contains phenylephrine) with Sudafed (contains pseudoephedrine).

**ADMINISTRATION/STORAGE**

1. Store drug in a brown bottle and away from light.
2. Instill a drop of local anesthetic before administering the 10% ophthalmic solution.
3. Store ophthalmic products from 20–25°C (68–77°F); store Neofrin in the refrigerator. Protect from light and excessive heat. Prolonged exposure to air or strong light may cause oxidation and discoloration. Do not use solution if it is brown or contains a precipitate.

**IV**

4. For intermittent IV administration, dilute each 1 mL (1 mg) of the 1% solution with 9 mL of sterile water. Further dilution of 10 mg in 500 mL of dextrose, Ringer’s, or saline solution may be titrated to client response.
5. Monitor infusion site closely to avoid extravasation. If evident, administer SC phentolamine locally to prevent tissue necrosis.
6. Prolonged exposure to air or strong light may result in oxidation and discoloration. Do not use solution if it changes color, becomes cloudy, or contains a precipitate.
7. The injection is for single use only; discard any unused portion.

**ASSESSMENT**

1. List reasons for therapy, type, onset, characteristics of S&S, clinical presentation; note goals of therapy.
2. During IV dosing monitor cardiac rhythm, BP continuously until stabilized; note any evidence of bradycardia or arrhythmias.
3. With IV extravasation infiltrate site using a fine gauge needle with 10–15 mL of NSS that contains 5–10 mg of phentolamine.

**CLIENT/FAMILY TEACHING**

1. Review frequency, method of administration, and care of containers.
2. Ophthalmic instillations and nasal decongestants may produce systemic sympathomimetic effects; chronic excessive use may cause rebound congestion.
3. Wear sunglasses in bright light. Report if symptoms of photosensitivity and blurred vision persist after 12 hr. Blurred vision should decrease with repeated use.
4. With ophthalmic solution, report if there is no relief of symptoms within 5 days. With eye drops, wash hands, do not allow dropper to touch eye. Tilt head back looking up; pull lower eyelid down and instill prescribed number of drops. Close eye, apply gentle pressure to bridge of nose for 1 to 3 min. Do not rub eye or touch top of dropper bottle to eye, fingers, or other surface. If more than 1 topical eye drug used, give at least 5 min apart administering the ointment last. If wearing contact lens, remove before instilling eye drops. Do not wear soft contact lens as some solutions may stain.
5. When using for nasal decongestion, rebound nasal congestion may occur with prolonged therapy. To use a nose spray, gently blow your nose. Sit down and tilt your head back slightly. Place the tip of the spray container into the nose. Using a finger from your other hand, press against the opposite nostril to close it off. Breathe gently through the open nostril and squeeze the spray container. Rinse tip of the spray unit in hot water and dry with a clean tissue to prevent contamination after use.
6. Keep all F/U to assess response and for adverse SE.

**OUTCOMES/EVALUATE**

- ↑ BP
- Termination of paroxysmal SVT
- Relief of nasal congestion
- ↓ Conjunctivitis/allergic S&S
- Dilatation of pupils

**Bold Italic** = life threatening side effect  
**■** = black box warning  
**♦** = Available in Canada