vasopressin (vay-soe-**press**-in)

~~Pitressin~~, Pressyn

Classification

Therapeutic: hormones
Pharmacologic: antidiuretic hormones

Pregnancy Category C

Indications

Central diabetes insipidus due to deficient antidiuretic hormone. **Unlabeled Use:** Management of pulseless VT/VF unresponsive to initial shocks, asystole, or pulseless electrical activity (PEA) (ACLS guidlines). Vasodilatory shock. Gastrointestinal hemorrhage.

Action

Alters the permeability of the renal collecting ducts, allowing reabsorption of water. Directly stimulates musculature of GI tract. In high doses acts as a nonadrenergic peripheral vasoconstrictor. **Therapeutic Effects:** Decreased urine output and increased urine osmolality in diabetes insipidus.

Pharmacokinetics

Absorption: IM absorption may be unpredictable.
Distribution: Widely distributed throughout extracellular fluid.
Metabolism and Excretion: Rapidly degraded by the liver and kidneys; <5% excreted unchanged by the kidneys.
Half-life: 10–20 min.

TIME/ACTION PROFILE (antidiuretic effect)

ROUTE	ONSET	PEAK	DURATION
IM, subcut	unknown	unknown	2–8 hr
IV	unknown	unknown	30–60 min

Contraindications/Precautions

Contraindicated in: Chronic renal failure with increased BUN; Hypersensitivity to beef or pork proteins.

Use Cautiously in: Perioperative polyuria (increased sensitivity to vasopressin); Comatose patients; Seizures; Migraine headaches; Asthma; Heart failure; Cardiovascular disease; Renal impairment ***Pedi: Geri:*** ↑ sensitivity to vasopressin effects.

Adverse Reactions/Side Effects

CNS: dizziness, "pounding" sensation in head. **CV:** MI, angina, chest pain. **GI:** abdominal cramps, belching, diarrhea, flatulence, heartburn, nausea, vomiting. **Derm:** paleness, perioral blanching, sweating. **Neuro:** trembling. **Misc:** allergic reactions, fever, water intoxication (higher doses).

Interactions

Drug-Drug: Antidiuretic effect may be ↓ by concurrent administration of **alcohol**, **lithium**, **demeclocycline**, **heparin**, or **norepinephrine**. Antidiuretic effect may be ↑ by concurrent administration of **carbamazepine**, **chlorpropamide**, **clofibrate**, **tricyclic antidepressants**, or **fludrocortisone**. Vasopressor effect may be ↑ by concurrent administration of **ganglionic blocking agents**.

Route/Dosage

Diabetes insipidus

IM, Subcut (Adults): 5–10 units 2–4 times daily.
IM, Subcut (Children): 2.5–10 units 2–4 times daily.
IV (Adults and Children): 0.0005 units/kg/hr, double dosage q 30 min as needed to a maximum of 0.01 units/kg/hr.

Pulseless VT/VF, Asystole, or PEA (ACLS guidelines)

IV (Adults): 40 units as a single dose (unlabeled).
IV (Children): 0.4 units/kg after resuscitation and at least 2 doses of epinephrine.

Vasodilatory shock

IV (Adults): 0.01–0.1 units/min, titrate to effect.
IV (Infants and Children): 0.0003–0.002 units/kg/min, titrate to effect.

GI Hemorrhage

IV (Adults): 0.2–0.4 units/min then titrate to maximum dose of 0.9 units/min; if bleeding stops continue same dose for 12 hr then taper off over 24–48 hr.
IV (Children): 0.002–0.005 units/kg/min then titrate to maximum dose of 0.01 units/kg/min; if bleeding stops continue same dose for 12 hr then taper off over 24–48 hr.

NURSING IMPLICATIONS

Assessment

- **Monitor BP, HR, and ECG periodically throughout therapy and continuously throughout cardiopulmonary resuscitation.**
- **Diabetes Insipidus:** Monitor urine osmolality and urine volume frequently to determine effects of medication. Assess patient for symptoms of dehydration (excessive thirst, dry skin and mucous membranes, tachycardia, poor skin turgor). Weigh patient daily, monitor intake and output, and assess for edema.
- ***Lab Test Considerations:*** Monitor urine specific gravity throughout therapy.
- Monitor serum electrolyte concentrations periodically during therapy.
- ***Toxicity and Overdose:*** Signs and symptoms of water intoxication include confusion, drowsiness, headache, weight gain, difficulty urinating, seizures, and coma.
- Treatment of overdose includes water restriction and temporary discontinuation of vasopressin until polyuria occurs. If symptoms are severe, administration of mannitol, hypertonic dextrose, urea, and/or furosemide may be used.

Potential Nursing Diagnoses

Deficient fluid volume (Indications)
Excess fluid volume (Adverse Reactions)

Implementation

- Aqueous vasopressin injection may be administered subcut or IM for diabetes insipidus.
- Administer 1–2 glasses of water at the time of administration to minimize side effects (blanching of skin, abdominal cramps, nausea).

IV Administration

- **pH:** 2.5–4.5.
- **Direct IV:** ***Diluent:*** Administer undiluted. ***Concentration:*** 20 units/mL. ***Rate:*** Administer over 1–2 sec during pulseless VT/VF, asystole, or PEA.
- **Continuous Infusion:** ***Diluent:*** Dilute 100 units of vasopressin in 250 mL of 0.9% NaCl or D5W. ***Concentration:*** 0.4 units/mL. ***Rate:*** See Route/Dosage section.
- **Y-Site Compatibility:** acyclovir, alemtuzumab, alfentanil, allopurinol, amifostine, amikacin, aminocaproic acid, aminophylline, amiodarone, amphotericin B liposome, anidulafungin, argatroban, ascorbic acid, atracurium , atropine, azathioprine, azithromycin, aztreonam, benztropine, bivalirudin, bleomycin, bumetanide, buprenorphine, busulfan, butorphanol, calcium chloride, calcium gluconate, carboplatin, carmustine, caspofungin, cefazolin, cefepime, cefoperazone, cefotaxime, cefotetan, cefoxitin, ceftaroline, ceftazidime, ceftriaxone, cefuroxime, chloramphenicol, chlorpromazine, ciprofloxacin, cisatracurium, cisplatin, clinadmycin, cyanocobalamin, cyclophosphamide, cyclosporine, cytarabine, dactinomycin, daptomycin, dexamethasone, dexmedetomidine, digoxin, diltiazem, diphenhydramine, dobutamine, docetaxel, dopamine, doxorubicin hydrochloride, doxycycline, droperidol, enalaprilat, ephedrine, epinephrine, epirubicin, epoetin alfa, ertapenem, erythromycin, esmolol, etoposide, etoposide phosphate, famotidine, fenoldopam, fentanyl, fluconazole, fludarabine, fluorouracil, folic acid, ganciclovir, gemcitabine, gentamicin, glycopyrrolate, granisetron, heparin, hetastarch, hydrocortisone, hydromorphone, idarubicin, ifosfamide, imipenem/cilastatin, irinotecan, isoproterenol, ketorolac, labetalol, levofloxacin, lidocaine, linezolid, lorazepam, magnesium sulfate, mannitol, mechlorethamine, melphalan, meperidine, meropenem, metaraminol, methohexital, methotrexate, methoxamine, methyldopate, methylprednisolone, metoclopramide, metoprolol, metronidazole, micafungin, midazolam, milrinone, mitoxandrone, morphine, moxifloxacin, multivitamins, mycophenolate, nafcillin, nalbuphine, naloxone, nesiritide, nicardipine, nitroglycerin, nitroprusside, norepinephrine, octreotide, ondansetron, oxacillin, oxaliplatin, oxytocin, paclitaxel, palonosetron, pamidronate, pantoprazole, papaverine, penicillin G, pentamidine, pentazocine, phenobarbital, phentolamine, phenylephrine, phytonadione, piperacillin/tazobactam, potassium acetate, potassium chloride, potassium phosphates, procainamide, prochlorperazine, promethazine, propranolol, protamine, pyridoxime, quinupristin/dalfopristin, ranitidine, remifentanil, rocuronium, sodium acetate, sodium bicarbonate, sodium phosphates, streptozocin, succinylcholine, sufentanil, tacrolimus, telavancin, teniposide, theophylline, thiamine, thiopental, thiotepa, ticarcillin/clavulanate, tigecycline, tirofiban, tobramycin, tolazoline, trimetaphan, vancomycin, vecuronium, verapamil, vincristine, vinorelbine, voriconazole, zidovudine, zoledronic acid.
- **Y-Site Incompatibility:** amphotericin B colloidal, amphotericin B lipid complex, dantrolene, diazepam, diazoxide, indomethacin, pemetrexed, phenytoin.

Patient/Family Teaching

- Instruct patient to take medication as directed. Caution patient not to use more than prescribed amount. Take missed doses as soon as remembered, unless almost time for next dose.

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- Advise patient to drink 1–2 glasses of water at time of administration to minimize side effects (blanching of skin, abdominal cramps, nausea). Inform patient that these side effects are not serious and usually disappear in a few minutes.
- Caution patient to avoid concurrent use of alcohol while taking vasopressin.
- Patients with diabetes insipidus should carry identification at all times describing disease process and medication regimen.

Evaluation/Desired Outcomes

- Decrease in urine volume.
- Relief of polydipsia.
- Increased urine osmolality in patients with central diabetes insipidus.
- Resolution of VT/VF.
- Improvement in signs of septic shock.

Why was this drug prescribed for your patient?