Hydralazine (hydral-a-zeen)

**Classification**
Therapeutic: antihypertensives
Pharmacologic: vasodilators

**Pregnancy Category C**

**Indications**
Moderate to severe hypertension (with a diuretic). End-labeled use: BP uncontrollable in conventional therapy with diuretics and antihypertensive.

**Action**
Direct acting peripheral arteriolar vasodilator. Therapeutic Effects: Lowering of BP in hypertensive patients and decreased afterload in patients with HF.

**Pharmacokinetics**
Absorption: Rapidly absorbed following oral administration; well absorbed from IM sites.
Distribution: Widely distributed. Crosses the placenta; enters breast milk in minimal concentrations.
Metabolism and Excretion: Mostly metabolized by the GI mucosa and liver by N-acetyltransferase (rate of acetylation is genetically determined [slow acetylators have higher hydralazine levels and increased risk of toxicity; fast acetylators have lower hydralazine levels and decreased response]).
Half-life: 2–8 hr.

**TIME/ACTION PROFILE (antihypertensive effect)**

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO</td>
<td>45 min</td>
<td>2 hr</td>
<td>2–4 hr</td>
</tr>
<tr>
<td>IV</td>
<td>5–20 min</td>
<td>15–30 min</td>
<td>2–6 hr</td>
</tr>
</tbody>
</table>

**Contraindications/Precautions**

- **Contraindicated in:** Hypersensitivity, Some products contain tartrazine and should be avoided in patients with known intolerance.
- **Cautious use in:** Cardiovascular or cerebrovascular disease; Severe renal and hepatic disease (dose modification may be necessary).

**Adverse Reactions/Side Effects**

- **CNS:** Dizziness, drowsiness, headache.
- **CV:** Tachycardia, angina, arrhythmias, edema, orthostatic hypotension.
- **GI:** Diarrhea, nausea, vomiting.
- **Derm:** Rash.
- **Endo:** Sodium retention.
- **MS:** Arthralgias, arthritis.
- **Neuro:** Peripheral neuropathy.
- **Misc:** Drug-induced lupus syndrome.

**Interactions**

- **Drug-Drug:** Hypotension with acute ingestion of alcohol, other antihypertensives, or nitrates. Medications that may exacerbate hypotension: May increase pressure response to epinephrine. NSAIDs may interfere with antihypertensive response. Beta blockers may increase plasma levels of hydralazine.
- **Route/Dosage**
  - **PO (Adults):** Hypertension—10 mg 4 times daily initially. After 2–4 days may ↑ to 25 mg 4 times daily for the rest of the 1st week; then ↑ to 50 mg 4 times daily (up to 300 mg/day). Once maintenance dose is established, twice-daily dosing may be used. 100 mg—25–50 mg 4 times daily, may be ↑ to 100 mg/day in 5–7 divided doses.
  - **PO (Children <1 yr):** Initial—0.75–1 mg/kg/day in 2–4 divided doses; may be gradually increased to 10 mg/kg/day in infants and 15 mg/kg/day in children (not to exceed 200 mg/day) in 2–4 divided doses.

**NURSING IMPLICATIONS**

- **Monitor BP and pulse frequently during initial dose adjustment and periodically during dosage.** Limited safety and efficacy data. Absolute contraindications (e.g., uncontrolled BP, preeclampsia) require alternative treatment.

**Use Cautiously in:** Cardiovascular or cerebrovascular disease; Severe renal and hepatic disease (dose modification may be necessary).

**Overdosage:** Has been used safely during pregnancy.
and Chinese are rapid acetylators at risk for decreased levels and treatment failure.

- Monitor frequency of prescription refills to determine adherence.

- Lab Test Considerations: Monitor CRP, electrolytes, LE cell prep, and ANA titers prior to and periodically during prolonged therapy.

- May cause a positive direct Coombs’ test result.

**Potential Nursing Diagnoses**

- Noncompliance (Patient/Family Teaching)

**Implementation**

- Do not confuse hydralazine with hydroxyzine.

- IM or IV route should be used only when drug cannot be given orally.

- May be administered concurrently with diuretics or beta blockers to permit lower doses and minimize side effects.

- PO: Administer with meals consistently to enhance absorption.

- Pharmacist may prepare oral solution from hydralazine injection for patients with difficulty swallowing.

**IV Administration**

- pH: 3.4–4.0.

- Direct IV: Diluent: Administer undiluted. Use solution as quickly as possible after drawing through needle into syringe. Concentration: 20 mg/mL. Rate: Administer over at least 1 min. Pediatric: Administer at a rate of 0.2 mg/kg/min in children. Monitor BP and pulse on all patients frequently after injection.

- Y-Site Compatibility: alemtuzumab, anidulafungin, argatroban, bivalirudin, bleomycin, carmustine, dactinomycin, diltiazem, doxorubicin, etoposide, etoposide phosphate, fenoldopam, fludarabine, gemcitabine, granisetron, hetastarch, hydromorphone, idarubicin, irinotecan, linezolid, mechlorethamine, metronidazole, milrinone, mitoxantrone, mycophenolate, oxaliplatin, paclitaxel, palonosetron, pamidronate, pancuronium, tacrolimus, teniposide, thiotaepa, tirofiban, vecuronium, vinorelbine, vitamin B complex with C, voriconazole, zoledronic acid.

- Y-Site Incompatibility: acyclovir, aminophylline, amphotericin B colloidal, amphotericin B lipid complex, ampicillin/sulbactam, aminoglycosides, ascorbic acid, azathioprine, cefazolin, cefoperazone, cefotaxime, cefoxitin, ceftazidime, ceftriaxone, cefuroxime, chloramphenicol, chlorpromazine, dantrolene, diazepam, dexamethasone, folic acid, gentamicin, heparin, hydrocortisone, hydroxyzine, isoniazid, ketorolac, lorazepam, methylprednisolone, metoclopramide, methotrexate, multivitamins, nafcillin, nitroprusside, oxacillin, pantoprazole, pemetrexed, pentobarbital, phenytoin, piperacillin/tazobactam, procainamide, sodium acetate, tigecycline, trimethoprim/sulfamethoxazole.

**Patient/Family Teaching**

- Instruct patient to take medication at the same time each day; last dose of the day should be taken at bedtime. Take missed doses as soon as remembered, do not double doses. If more than 2 doses in a row are missed, contact health care professional. Must be discontinued gradually to avoid sudden increase in BP. Hydralazine controls but does not cure hypertension.

- Encourage patient to comply with additional interventions for hypertension (weight reduction, low-sodium diet, avoided sodium in medications, alcohol abstinence, regular exercise, and stress management). Instruct patient and family on proper technique for BP monitoring. Advise patient to check BP at least weekly and report significant changes.

- Patients should weigh themselves twice weekly and assess feet and ankles for fluid retention.

- May occasionally cause drowsiness. Advise patient to avoid driving or other activities requiring alertness until response to medication is known.

- Encourage patient to avoid sudden changes in position to minimize orthostatic hypotension.

- Advise patient to notify health care professional of all Rx or OTC medications, vitamins, herbal products being taken and to consult with health care professional before taking other medications, especially cough, cold, or allergy remedies.

- Instruct patient to notify health care professional of medication prior to treatment or surgery.

- Advise patient to notify health care professional immediately if general tiredness; fever, chills, or joint aching; chest pain; skin rash; sore throat; or numbness, tingling, pain, or weakness of hands and feet occurs. Vitamin B6 (pyridoxine) may be used to treat peripheral neuritis.

- Emphasize the importance of follow-up exams to evaluate effectiveness of medication.

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CONTINUED
hydrALAZINE

Evaluation/Desired Outcomes

 ● Decrease in BP without appearance of side effects.
 ● Decrease of afterload in patients with HF.

Why was this drug prescribed for your patient?