hydralazine/isosorbide dinitrate
(hy-dral-a-zeen eye-so-sor-bide di-nit-rate)

**Classification**
Therapeutic: vasodilators
Pharmacologic: vasodilators, nitrates

**Pregnancy Category C**

**Indications**
Management of heart failure in black patients.

**Action**
It is a fixed-dose combination of isosorbide dinitrate, a vasodilator with effects on both arteries and veins, and hydralazine, a predominantly arterial vasodilator.

**Therapeutic Effects:** Improved survival, increased time to hospitalization and decreased symptoms of heart failure in black patients.

**Pharmacokinetics**
See pharmacokinetic sections in hydralazine and isosorbide dinitrate monographs of Davis's Drug Guide for Nurses for more information.

**Absorption:** Hydralazine — 10–26% absorbed in HF patients, absorption can be saturated leading to large increases in absorption with higher doses; isosorbide dinitrate — variable absorbed (10–90%) reflecting first-pass hepatic metabolism.

**Distribution:** Hydralazine — widely distributed, crosses the placenta, minimal amounts in breast milk; isosorbide dinitrate — accumulates in muscle and venous wall.

**Metabolism and Excretion:** Hydralazine — mostly metabolized by GI mucosa and liver; isosorbide dinitrate — undergoes extensive first-pass metabolism in the liver mostly metabolized by the liver, some metabolites are vasodilators.

**Half-life:** Hydralazine — 4 hr; isosorbide dinitrate — 2 hr

**TIME/ACTION PROFILE (effect on BP)**

<table>
<thead>
<tr>
<th>Route</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tbody>
<tr>
<td>Oral</td>
<td>45 min</td>
<td>2 hr</td>
<td>2–4 hr</td>
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**Contraindications/Precautions**
Contraindicated in: Hypersensitivity to either component.

**Use Cautiously in:**
- Lactation: Pedi: Safety not established in children or breast-fed infants; Cardiovascular or cerebrovascular disease; Severe renal/hepatic disease (dose modification may be necessary); OR: Use with caution during pregnancy.

**Adverse Reactions/Side Effects**

**Hydralazine**
- CNS: dizziness, drowsiness, headache.
- CV: tachycardia, angina, arrhythmias, edema, orthostatic hypotension.
- GI: diarrhea, nausea, vomiting.
- Derm: rash, edema.
- F and E: sodium retention.
- MS: arthralgia, arthritis.
- Neuro: peripheral neuropathy.
- Misc: drug-induced lupus syndrome.

**Isosorbide Dinitrate**
- CNS: dizziness, headache, apprehension, weakness.
- CV: hypotension, paradoxic bradycardia, syncope.
- GI: abdominal pain, nausea, vomiting.
- Misc: cross-tolerance, flushing, tolerance.

**Interactions**

**Drug-Drug:**
- Risk of hypotension with phosphodiesterase inhibitors (sildenafil, vardenafil, or tadalafil) other antihypertensives, acute ingestion of alcohol, beta blockers, calcium channel blockers, and phenothiazines. MAO inhibitors may exaggerate hypotension. May reduce the pressor response to epinephrine.
- Beta blockers, calcium channel blockers, and phenothiazines: blood levels of metoprolol and propranolol are increased.

**Route/Dosage**
**PO (Adults):** 1 tablet 3 times daily, may be increased to 2 tablets 3 times daily.
2 NURSING IMPLICATIONS
Assessment
- Monitor BP and pulse routinely during period of dosage adjustment. Symptomatic hypotension may occur even with small doses. Use caution with patients who are volume depleted or hypotensive.
- Lab Test Considerations: If symptoms of systemic lupus erythematosus (SLE) occur, obtain a CBC and ANA titer. If positive for SLE, carefully weigh risks/benefits of continued therapy.

Potential Nursing Diagnoses
- Activity intolerance (Indications)

Implementation
- Dose may be titrated rapidly over 3– 5 days, but may need to decrease if side effects occur. Titrate up as soon as side effects subside.

Patient/Family Teaching
- Instruct patient to take medication as directed on a regular schedule.
- Caution patient to make position changes slowly to minimize orthostatic hypotension.
- May cause dizziness. Caution patient to avoid driving or other activities requiring alertness until response to medication is known.
- Advise patient to avoid concurrent use of alcohol or medications for erectile dysfunction with this medication. Patients should also consult health care professional before taking Rx, OTC, or herbal products while taking this medication.
- Instruct patient that headache is a common side effect that should decrease with continuing therapy. Aspirin or acetaminophen may be ordered to treat headache. Notify health care professional if headache is persistent or severe. Do not alter dose to avoid headache.
- Advise patient to notify health care professional if symptoms of systemic lupus erythematosus recur (arthralgia, fever, chest pain, prolonged malaise or other unexplained symptoms).

Evaluation/Desired Outcomes
- Improved survival, increased time to hospitalization and decreased symptoms of heart failure in black patients.