**treprostinil (parenteral)** (tre-pros-sin-il)

**treprostinil (inhalation)**

**Classification**

Therapeutic: vasodilators
Pharmacologic: prostacyclins

**Pregnancy Category** B

**Indications**

IV: Pulmonary arterial hypertension (WHO Group I). Pulmonary arterial hypertension in patients requiring transition from epoprostenol. Inhalation: Pulmonary arterial hypertension (WHO Group I).

**Action**

Treprostinil is a prostacyclin that produces direct vasodilation of pulmonary and systemic arterial vascular beds. Also inhibits platelet aggregation.

**Therapeutic Effects:** Decreased exercise-associated symptoms in patients with pulmonary arterial hypertension.

**Pharmacokinetics**

Absorption: Rapidly and completely (near 100%) absorbed following subcutaneous administration; bioavailability after inhalation is 64–72%.

Distribution: Unknown.

Protein Binding: 91%.

Metabolism and Excretion: Extensively metabolized by the liver (by CYP2C8), metabolites are renally excreted; minimal excretion of unchanged drug in urine.

Half-life: 4 hr.

**TIME/ACTION PROFILE (clinical improvement)**

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subcut</td>
<td>unknown</td>
<td>1 wk</td>
<td>unknown</td>
</tr>
<tr>
<td>Inhalation</td>
<td>unknown</td>
<td>unknown</td>
<td>unknown</td>
</tr>
</tbody>
</table>

**Contraindications/Precautions**

**Contraindicated in:** Known hypersensitivity.

Use Cautionally in: Renal impairment; Hepatic impairment (dose recommended in mild to moderate hepatic insufficiency; data not available for severe hepatic insufficiency); Pulmonary disease (administration only); Avoid abrupt discontinuation or rapid dose reduction; OR Use only if clearly needed; Lactation; Pediatric patients. Feed: None; Drug Interactions: None.

**Adverse Reactions/Side Effects**

CNS: Dizziness, headache.

CV: Vasodilation, hypotension, edema.

GI: Diarrhea, nausea.

Derm: Rash, pruritus, flushing.

Hemat: Bleeding.

Local: Infusion site pain/reaction.

MS: Jaw pain.

Misc: Angioedema.

**Interactions**

Drug-Drug: Risk of hypotension with antihypertensives, diuretics, or vasodilators. Effects may be increased by gemfibrozil. Effects may be decreased by rifampin. Risk of bleeding may be increased by concurrent use of anticoagulants.

**Route/Dosage**

**Subcut, IV (Adults):** Naive to prostacyclin therapy—1.25 ng/kg/min may be increased to 0.625 ng/kg/min if intolerance occurs. Increments of no more than 1.25 ng/kg/min may be made weekly for the first 4 wk and then no more than 2.5 ng/kg/min for the remainder of therapy. Avoid abrupt discontinuation or rapid dose reduction. Patients requiring transition from epoprostenol—Initiate at 10% of current epoprostenol dose; qd as epoprostenol dose is reduced. Subcutaneous infusion rate may be calculated with the following formula: Subcutaneous infusion rate (mL/hr) = [Dose (ng/kg/min) x weight (kg)] x 0.00006/treprostinil vial strength (mg/mL).

**Hepatic Impairment**

Subcut, IV (Adults): Mild or moderate hepatic impairment—Initial dose to 0.625 ng/kg/min (using ideal body weight). Inhalation (Adults): 3 breaths (18 mcg) 4 times daily, may qd by 3 breaths/treatment every 1–2 wk until target dose of 9 breaths (54 mcg) 4 times daily is achieved.

**NURSING IMPLICATIONS**

**Assessment**

Monitor patient for signs of improvement in pulmonary arterial hypertension (decrease in dyspnea, increased exercise tolerance) periodically during therapy.

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Potential Nursing Diagnoses

Acute pain - pain at infusion site reactions (pain, erythema, induration, rash) during therapy.

Implementation

- Treprostinil should be used only by clinicians experienced in the treatment of pulmonary arterial hypertension. Initiation of therapy should be in a setting equipped personnel for monitoring and emergency treatment.
- Assess patient’s ability to accept and administer treprostinil, and insert and care for infusion system prior to initiating therapy.
- Dose should be increased for lack of improvement or worsening in symptoms, or decreased for excessive side effects or infusion site reactions.
- IV: Assess patient for infusion site reactions (pain, erythema, induration, rash) during therapy.
- Inhaln: Monitor BP during therapy. May cause hypotension.

Potential Nursing Diagnoses

Activity intolerance (Indications)

Deficient knowledge, related to medication regimen (Patient/Family Teaching)

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- Assess patient’s ability to accept and administer treprostinil, and insert and care for infusion system prior to initiating therapy.
- Dose should be increased for lack of improvement or worsening in symptoms, or decreased for excessive side effects or infusion site reactions.
- Subcut route is preferred. IV route may be used if subcut route is not tolerated due to severe site pain or reactions.

IV Administration

- Continuous Infusion: Administer via a surgically placed indwelling central venous catheter, using an infusion pump designed for intravenous drug delivery. If clinically necessary, a temporary peripheral intravenous catheter may be used, provided a large vein is used for short-term administration. Use of a preservative-free 5% dextrose in water for injection solution is recommended. Infusion should be at a flow rate of 0.2 to 0.5 mL/hour. Do not infuse more than 200 mg of treprostinil per day over a period of at least 24 hours. Do not dilute the solution with saline or other diluents. Refer to manufacturer’s instructions.

Patient/Family Teaching

- Inform patient on insertion of catheter and use of pump. Patient must have immediate access to a backup infusion pump and subcut infusion set to prevent potential interruptions in drug delivery.

Subcut:

- Patient/Family Teaching

- Inform patient if headache, nausea, vomiting, restlessness, anxiety, or infusion site reactions occur.

Cont.
Continued

Treprostinil (parenteral)

Indication: If a scheduled treatment session is missed or interrupted, resume therapy as soon as possible. Avoid skin and eye contact with solution.

Evaluation/Desired Outcomes

- Improved exercise tolerance in patients with pulmonary arterial hypertension.

Why was this drug prescribed for your patient?