**Trandolapril**

**Trandolapril** (tran-doe-la-pril)

**Classification**

Therapeutic: antihypertensives

Pharmacologic: ACE inhibitors

**Pregnancy Category D**

**Indications**

Alone or with other agents in the management of hypertension. Reduction of risk of death and heart-failure-related hospitalizations in patients with left ventricular systolic dysfunction or heart failure symptoms following myocardial infarction.

**Action**

Angiotensin-converting enzyme (ACE) inhibitors block the conversion of angiotensin I to the vasoconstrictor angiotensin II. ACE inhibitors also prevent the degradation of bradykinin and other vasodilatory prostaglandins. ACE inhibitors also lower plasma renin levels and aldosterone levels. Net result is systemic vasodilation.

**Therapeutic Effects:**

Lowering of BP in hypertensive patients. Increased survival after myocardial infarction.

**Pharmacokinetics**

**Absorption:**

70% bioavailability as trandolaprilat following oral administration.

**Distribution:**

Crosses the placenta; enters breast milk.

**Protein Binding:**

80%.

**Metabolism and Excretion:**

Converted by the liver to trandolaprilat, the active metabolite; 33% excreted in urine, 66% in feces.

**Half-life:**

Trandolapril: 6 hr; Trandolaprilat: 22.5 hr (in renal impairment).

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

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tbody>
<tr>
<td>PO</td>
<td>within 1–2 hr*</td>
<td>within 1 wk†</td>
<td>up to 24 hr†</td>
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*After single dose
†Chronic dosing

**Contraindications/Precautions**

**Contraindicated in:**

Hypersensitivity; History of angioedema with previous use of ACE inhibitors; Concurrent use with aliskiren in patients with diabetes or moderate-to-severe renal impairment (CCr = 60 mL/min); OB: Can cause injury or death of fetus – if pregnancy occurs, discontinue immediately; Lactation: Discontinue drug or use formula.

**Use Cautionally in:**

Black patients (monotherapy for hypertension less effective, may require additional therapy; higher risk of angioedema; hyperkalemia may be exaggerated); Women of childbearing potential; Renal impairment, hypovolemia, hypokalemia, concurrent diuretic therapy, and Geri: Initial dose is recommended; Pedi: Safety not established.

**Exercise Extreme Caution in:**

Family history of angioedema.

**Adverse Reactions/Side Effects**

**CNS:**

Weakness.

**Resp:**

Cough.

**CV:**

Hypotension.

**Endo:**

Hyperuricemia.

**GI:**

Diarrhea, dyspepsia.

**GU:**

Impaired renal function.

**Derm:**

Rashes.

**F and E:**

Hyperkalemia, hypocalcemia.

**MS:**

Myalgia.

**Misc:**

ANGIOEDEMA.

**Interactions**

**Drug-Drug:**

Excessive hypotension may occur with concurrent use of diuretics, aldosterone antagonists, and other antihypertensive agents; risk of hyperkalemia with concurrent use of potassium supplements, potassium-containing salt substitutes, and potassium-sparing diuretics; risk of hyperkalemia, renal dysfunction, hypertension, and anasarca with concurrent use of angiotensin II receptor antagonists or aliskiren; avoid concurrent use with aliskiren in patients with diabetes or CCr < 60 mL/min; NSAIDs and selective COX-2 inhibitors may blunt the antihypertensive effect and the risk of renal dysfunction; may cause hyperkalemia, renal dysfunction, and syncope with concurrent use of angiotensin II receptor antagonists or aliskiren; avoid concurrent use with aliskiren in patients with diabetes or CCr < 60 mL/min; may blunt antihypertensive effect and risk of renal dysfunction; NSAIDs and selective COX-2 inhibitors may blunt the antihypertensive effect and the risk of renal dysfunction.

**Route/Dosage**

**PO (Adults):**

**Hypertension—**1 mg once daily (2 mg in Black patients). May be increased to 2 mg once daily after 1 wk. Avoid use in patients with severe renal impairment (CCr < 30 mL/min). May be increased up to 4 mg once daily. Twice-daily dosing may be necessary in some patients (initiate therapy at 0.5 mg/day in patients receiving diuretics). Short-failure post-MI or left ventricular dysfunction post-MI—Initiate therapy at 1 mg once daily. Gradually increase to 2 mg once daily as tolerated.

**Renal Impairment**

**PO (Adults):**

CCr < 30 mL/min—Initiate therapy at 1 mg once daily, may be slowly titrated upward (max dose = 4 mg/day).

**Hepatic Impairment**

**PO (Adults):**

Initiate therapy at 0.5 mg once daily, may be slowly titrated upward (max dose = 4 mg/day).

**Pharmacotherapeutics**

**Stability:**

Shake well before use. Store at room temperature.

**Compatibility:**

**Incompatible with:**

Ampules, solutions, and devices containing aluminum.
NURSING IMPLICATIONS

Assessment

- **Hypertension:** Monitor BP and pulse frequently during initial dose adjustment and periodically during therapy. Notify health care professional of significant changes.
- **Hypothyroidism:** Monitor frequency of prescription refill to determine compliance.
- **Heart Failure:** Monitor weight and assess patient routinely for resolution of fluid overload (peripheral edema, edema, dyspnea, weight gain, irregular versus diminished)
- **Lab Test Considerations:** Monitor renal function. May cause BUN and serum creatinine.
- **May cause hyperkalemia.
- **May cause hypokalemia.
- **Monitor CBC periodically during therapy in patients with collagen vascular disease and/or renal disease. May rarely cause agranulocytosis.
- **May cause AST, ALT, alkaline phosphatase, serum bilirubin, and uric acid.

Potential Nursing Diagnoses

- Decreased cardiac output (Indications) (Side Effects)
- Deficient knowledge, related to medication regimen (Patient/Family Teaching)
- Noncompliance (Patient/Family Teaching)

Implementation

- **PO:** May be taken with or without food.
- **Due to risk for precipitous drop in BP at initiation of therapy, correct pre-existing volume depletion, if possible. Discontinuing diuretic therapy or cautiously increasing salt intake 2–3 days prior to initiation may decrease this risk. Monitor closely for at least 1 hr after BP has stabilized.
- **Emphasize importance of continuing to take medication as directed at the same time each day, even if feeling well. Take missed doses as soon as remembered but not at double dose the next day. Do not double doses. Warn patient not to discontinue ACE inhibitor therapy unless directed by health care professional.
- **Caution patients to avoid salt substitutes containing potassium or foods containing high levels of potassium or sodium unless directed by health care professional.
- **Caution patient to change positions slowly to minimize orthostatic hypotension. Use of alcohol, standing for long periods, exercising, and hot weather may increase orthostatic hypotension.
- **Monitor patient to notify health care professional of all Rx or OTC medications, vitamins, or herbal products being taken and consult health care professional before taking any new medications, especially cough, cold, or allergy remedies.
- **May cause dizziness. Caution patient to avoid driving and other activities requiring alertness until response to medication is known.
- **Advise patient to inform health care professional of all medication regimen prior to treatment or surgery.
- **Instruct patient to notify health care professional if rash; mouth sores; sore throat; fever; swelling of hands or feet; irregular heartbeat; chest pain; dry cough; hoarseness; swelling of face, eyes, lips, or tongue; or if difficulty swallowing or hoarseness occurs. Proceed dry cough may occur and may not subside until medication is discontinued. General health care professional if cough becomes bothersome. Also notify health care professional if nausea, vomiting, or diarrhea occurs and continues.
- **Advise women of childbearing age to use contraception and notify health care professional if pregnancy is planned or suspected. If pregnancy is detected, discontinue medication as soon as possible.
- **Emphasize the importance of follow-up examinations to monitor effectiveness of medication.
- **Hypertension:** Encourage patient to comply with additional interventions for hypertension (weight reduction, low sodium diet, discontinuation of smoking, reduction of alcohol consumption, regular exercise, and stress management). Medications control but do not cure hypertension.
- **Instruct patient and family on correct techniques for monitoring BP. Advise them to check BP at least weekly and to report significant changes to health care professional.

Evaluation/Desired Outcomes

- **Decrease in BP without appearance of side effects.
- **Reduction of risk of death or heart-failure-related hospitalizations following myocardial infarction.
- **Why was this drug prescribed for your patient?**

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