candesartan (kan-de-sar-tan)

Therapeutic Class: antihypertensives
Pharmacologic: angiotensin II receptor antagonists

Indications
- Alone or with other agents in the management of hypertension.
- Treatment of heart failure (New York Heart Association class II-IV) in patients with left ventricular systolic dysfunction (ejection fraction <40%) (can be used with an ACE inhibitor and beta-blocker).

Action
Blocks the vasoconstrictor and aldosterone-secreting effects of angiotensin II at various receptor sites, including vascular smooth muscle and the adrenal glands.

Therapeutic Effects:
- Lowering of BP in patients with hypertension.
- Reduced cardiovascular death and heart-failure-related hospitalizations in patients with heart failure.

Pharmacokinetics
- Absorption: Candesartan cilexetil is a prodrug that is converted to candesartan (the active component); 15% bioavailability of candesartan.
- Distribution: Crosses the placenta and enters breast milk.
- Protein Binding: 99%.
- Metabolism and Excretion: Minor metabolism by the liver; 33% excreted in urine; 67% in feces (via bile).
- Half-life: 9 hr.

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>2–4 hr†</td>
<td>4 wks‡</td>
<td>24 hr‡</td>
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†After single dose
‡Chronic dosing

Contraindications/Precautions
- Contraindicated in: Hypersensitivity; Bilateral renal artery stenosis; Concurrent use with aliskiren in patients with diabetes or moderate-to-severe renal impairment (CCr ≤60 mL/min); Severe hepatic impairment.
- Use Cautiously in: Volume- or salt-depleted patients or patients receiving large doses of diuretics (correct deficits before initiating therapy or initiate at lower doses); Black patients (may not be as effective); Impaired renal function due to primary renal disease or HF (may worsen renal function); Women of childbearing potential – if pregnancy occurs, discontinue immediately.

Adverse Reactions/Side Effects
- CNS: dizziness, fatigue, headache.
- CV: hypotension, chest pain, edema.
- F and E: hyperkalemia.
- GI: abdominal pain, diarrhea, nausea.
- GU: impaired renal function.
- MS: arthralgia, back pain.
- Misc: ANGIOEDEMA.

Interactions
- Drug-Drug: NSAIDs and selective COX-2 inhibitors may blunt the anti-hypertensive effect and ↑ the risk of renal dysfunction. Additive hypotension with other antihypertensives. Diuretic hypotension may occur with concurrent use of diuretics. Concurrent use of potassium-sparing diuretics, potassium supplements, or potassium-containing salt substitutes, or potassium supplements may ↑ risk of hyperkalemia. ↑ risk of hyperkalemia, renal dysfunction, hypotension, and syncope with concurrent use of ACE inhibitors or aliskiren; avoid concurrent use with aliskiren in patients with diabetes or CCr ≤60 mL/min. ↑ levels and may ↑ risk of lithium toxicity.

Route/Dosage
- Hypertension
  - PO (Adults): 16 mg once daily; may be ↑ up to 32 mg/day in 1–2 divided doses (initiate therapy at lower dose in patients who are receiving diuretics or are volume depleted).
  - PO (Children 6–16 yr and ≥50 kg): 8–16 mg/day (in 1–2 divided doses); may be ↑ up to 32 mg/day (in 1–2 divided doses).
  - PO (Children 1–5 yr): 0.20 mg/kg/day (in 1–2 divided doses); may be ↑ up to 0.4 mg/kg/day (in 1–2 divided doses).

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ED: Discontinued.
Hepatic Impairment
(Adults): Moderate hepatic impairment—Initiate at 8 mg once daily.

Heart Failure
PO (Adults): 4 mg once daily initially, dose may be doubled at 2-wk intervals up to
target dose of 32 mg once daily.

NURSING IMPLICATIONS
Assessment
• Assess BP (sitting, standing) and pulse frequency during initial dose adjust-
ment and periodically during therapy. Notify health care professional of significant
changes.
• Measure frequency of prescription refills to determine compliance.
• Assess patients for signs of angioedema (dyspnea, facial swelling). May
rarely cause angioedema.
• HF: Monitor daily weight and assess patient routinely for resolution of fluid over-
load (peripheral edema, rales/crackles, dyspnea, weight gain, jugular venous dis-
tention).

Lab Test Considerations:
• Monitor renal function. May cause
  q in BUN and se-
rum creatinine.
• May cause
  q AST, ALT, and serum bilirubin.
• May cause hyperkalemia and hyponatremia.
• May cause slight
  p in hemoglobin and hematocrit. May cause neutropenia, leuko-
openia, and agranulocytosis.

Potential Nursing Diagnoses
Risk for injury (Adverse Reactions)
Noncompliance (Patient/Family Teaching)
Implementation
• Volume depletion should be corrected, if possible, before initiation of therapy.
• PO: An oral solution may be prepared by crushing the tablets.

Patient/Family Teaching
• Emphasize the importance of continuing to take as directed, even if feeling well.
Take missed doses as soon as remembered if not almost time for next dose; do not
double doses. Instruct patients to take medication at the same time each day. Warn
patient not to discontinue therapy unless directed by health care professional. Ad-
vice patients to read Patient Information prior to starting and with each Rx refill in
case of changes.
• Gastric intolerance to avoid vasoconstrictors containing potassium or foods contain-
ing high levels of potassium or sodium directed by health care professional.
• Gastric intolerance to avoid sudden position changes to decrease orthostatic hypoten-
sion. Use of alcohol, standing for long periods, exercising, and hot weather may
increase orthostatic hypotension.
• May cause dizziness. Caution patient to avoid driving or other activities requiring
alertness until response to medication is known.
• Instruct patient to notify health care professional of all Rx or OTC medications, vi-
tamins, or herbal products being taken and to consult health care professional be-
fore taking any OTC cough, cold, or allergy remedies or other medications or
herbal products.
• Instruct patient to notify health care professional of medication regimen before
treatment or surgery.
• Instruct patient to notify health care professional if swelling of face, eyes, lips, or tongue or if difficulty swallowing or breathing occurs.
• Advise women of childbearing age to use contraception and notify health care pro-
fessional immediately if pregnancy is planned or suspected or if breast feeding.
• Emphasize the importance of follow-up exams to evaluate effectiveness of medica-
tion.
• Hypertension: Encourage patient to comply with additional interventions for hy-
pertension (weight reduction, low-sodium diet, discontinuation of smoking, mod-
cration of alcohol consumption, regular exercise, stress-management). Medication
controls but does not cure hypertension.
• Instruct patient and family on proper techniques for monitoring BP. Advise them to
check BP at least weekly and to report significant changes.

Evaluation/Desired Outcomes
• Decrease in BP without appearance of excessive side effects. Antihypertensive ef-
fect usually occurs in 2 wks and full effect occurs within 4 wks.
• Decreased cardiovascular death and heart failure-related hospitalizations in pa-
tients with HF.

Why was this drug prescribed for your patient?
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