chlorothiazide (klor-oh-thye-a-zide)

**Drug Class:**
Therapeutic: antihypertensives, diuretics
Pharmacologic: thiazide diuretics

**Pregnancy Category:** B

**Indications:**
Management of mild to moderate hypertension. Treatment of edema associated with:
- HF
- Renal dysfunction
- Cirrhosis
- Corticosteroid therapy
- Estrogen therapy

**Action:**
Increases excretion of sodium and water by inhibiting sodium reabsorption in the distal tubule. Promotes excretion of sodium, chloride, potassium, magnesium, phosphate, water, and bicarbonate. May produce arteriolar dilation. **Therapeutic Effects:**
Lowering of BP in hypertensive patients and diuresis with mobilization of edema.

**Pharmacokinetics:**

- **Absorption:** Poor (10–20%) after oral administration.
- **Distribution:** Distributed into extracellular space; crosses the placenta and enters breast milk.
- **Metabolism and Excretion:** Excreted mainly unchanged by the kidneys.
- **Half-life:** 1–2 hr.

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

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO, IV</td>
<td>2 hr</td>
<td>4 hr</td>
<td>6–12 hr (PO); 2 hr (IV)</td>
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</tbody>
</table>

**Contraindications/Precautions:**

- **Contraindicated in:** Hypersensitivity (cross-sensitivity with other thiazides or sulfonylamides may exist)
- **Use Cautiously in:** Renal or hepatic impairment; OB: May cause jaundice or thrombocytopenia in newborn; Pedi: May cause jaundice or thrombocytopenia in newborn; Geri: May have risk of side effects due to age-related renal function.

**Adverse Reactions/Side Effects:**

- **CNS:** dizziness, drowsiness, lethargy, weakness
- **CV:** hypotension
- **GI:** anorexia, cramping, hepatitis, nausea, vomiting, pancreatitis
- **Derm:** photosensitivity, rashes
- **Endo:** hyperglycemia
- **F and E:** hypokalemia, dehydration, hypercalcemia, hypochloremic alkalosis, hypomagnesemia, hyponatremia
- **Hemat:** blood dyscrasias (rare), thrombocytopenia

**Interactions:**

- **Drug-Drug:** Additive hypotension with other antihypertensives, acute ingestion of alcohol or nitrites. Additive hypokalemia with corticosteroids, amphotericin B, loop diuretics, piperacillin, or ticarcillin. Excision of lithium. Cholestyramine or colestipol. Absorption: Hypokalemia risk of digitalis toxicity. NSAIDs may affect effectiveness.

**Route/Dosage:**

- **When used as a diuretic in adults, generally given daily, but may be given every other day or 2–3 days/wk.

- **PO (Adults):**
  - 125 mg–2 g/day as a single dose or in 2 divided doses.

- **PO (Children 6 mo):**
  - 20 mg/kg/day as a single dose or in 2 divided doses. Maximum dose: 1 g/day.

- **PO (Neonates up to 6 mo):**
  - 20–40 mg/kg/day in 2 divided doses. Maximum dose: 375 mg/day.

- **IV (Adults):**
  - 100–500 mg/day as a single dose or in 2 divided doses.

- **IV (Children 6 mo):**
  - 4 mg/kg/day in 1–2 divided doses. Maximum dose: 20 mg/kg/day.

- **IV (Neonates up to 6 mo):**
  - 2–8 mg/kg/day in 2 divided doses. Maximum dose: 20 mg/kg/day.

**NURSING IMPLICATIONS**

- **Assessment:**
  - Monitor BP, intake, output, and daily weight and assess feet, legs, and sacral area for edema daily.

- **Nursing Considerations:**
  - Monitor BP, intake, output, and daily weight and assess feet, legs, and sacral area for edema daily.

- **Patient/Family Teaching:**
  - Teach patient to monitor BP and weight and report any changes to a physician.

- **Weight Management:**
  - Encourage patient to maintain a healthy weight and diet.

- **Lab Test Considerations:**
  - Monitor serum electrolyte levels and renal function tests before and during therapy.

- **Patient Information:**
  - Inform patient to report symptoms of hypokalemia (fatigue, weakness, muscle cramps, nausea, vomiting).

- **Reproductive Health:**
  - Inform OB/GYN if using this medication.

- **Membrane Permeability:**
  - Inform patient to report symptoms of hypokalemia (fatigue, weakness, muscle cramps, nausea, vomiting).

- **Dosage Calculation:**
  - Use standard dosage for adults and children over 6 months of age.

- **Intravenous Administration:**
  - Administer slowly over 5–10 min to avoid hypotension.

- **Toxicity and Overdose:**
  - Overdosage may cause severe hypovolemia, hypotension, and shock.

**Additional Information:**

- **Canadian drug name:**
  - **Genetic Implication:** CAPI TALS indicate life-threatening, underline indicate most frequent. Strikethrough indicate discontinued.
Assess patient, especially if taking digitalis glycosides, for anorexia, nausea, vomiting, muscle cramps, paresthesia, and confusion. Notify health care professional if these signs of electrolyte imbalance occur. Patients taking digitalis glycosides are at risk of digitalis toxicity as a result of the potassium-depleting effect of the diuretic.

- Assess for allergy to sulfonamides.

- Hypertension: Monitor BP before and periodically during therapy.

- Lab Test Considerations: Monitor electrolytes (especially potassium), blood glucose, BUN, serum creatinine, and uric acid levels before and periodically during therapy.

- May cause ↓ serum bilirubin, calcium, creatinine, and uric acid, and ↑ serum magnesium, potassium, sodium, and urinary calcium concentrations.

- May cause ↑ serum cholesterol, low-density lipoprotein, and triglyceride concentrations.

Potential Nursing Diagnoses

- Excess fluid volume (Indications)
- Risk for deficient fluid volume (Side Effects)
- Deficient knowledge, related to medication regimen (Patient/Family Teaching)

Implementation

- Administer in the morning to prevent disruption of sleep cycle for urination.

- Intermittent dose schedule may be used for continued control of edema.

- PO: May give with food or milk to minimize GI irritation. Tablets may be crushed and mixed with fluid to facilitate swallowing.

- IV Administration

  - pH: 9.2–10
  - Concentration: Reconstitute 500 mg vial of chlorothiazide with at least 18 mL of sterile water for injection. Shake to dissolve. Stable for 24 hr at room temperature. Diluent: May be diluted further with D5W or 0.9% NaCl. Concentration: Not to exceed 27.8 mg/mL. Rate: Administer over 30 min.

- Patient/Family Teaching

  - Instruct patient to take this medication at the same time each day. Take missed doses as soon as remembered but not just before next dose is due. Do not double doses.

  - Instruct patient to monitor weight biweekly and notify health care professional of significant changes.

  - Caution patient to change positions slowly to minimize orthostatic hypotension. This may be potentiated by alcohol.

  - Advise patient to use sunscreen and protective clothing to prevent photosensitivity reactions.

  - Instruct patient to discuss dietary potassium requirements with health care professional.

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

  - Advise patient to report muscle weakness, cramps, nausea, vomiting, diarrhea, or dizziness to health care professional.

  - Emphasize the importance of routine follow-up exams.

  - Hypertension: Advise patients to continue taking the medication even if feeling better. Medication must be discontinued only on care of hypertension.

  - Encourage patient to comply with additional interventions for hypertension (weight reduction, low-sodium diet, regular exercise, smoking cessation, moderation of alcohol consumption, and stress management).

  - Instruct patient and family in correct technique for monitoring urine BP.

  - Advise patient to consult health care professional before taking other Rx, OTC, or herbal products, especially cough or cold preparations, concurrently with this therapy.

Evaluation/Desired Outcomes

- Decrease in BP
- Decrease in edema
- Why was this drug prescribed for your patient?