Monitor vital signs, especially blood pressure. Take blood pressure sitting, lying, and standing to detect orthostatic hypotension. (Diuretics reduce circulating blood volume, resulting in lowered blood pressure.)

Ensure client safety. Observe for changes in level of consciousness. Monitor ambulation until effects of drug are known. (Postural hypotension may occur.)

Measure intake and output, and record daily weights. (Diuresis is indicated by output greater than intake, and weight loss.)

Monitor nutritional status. (Electrolyte imbalances may occur.)

Observe for signs of hyperglycemia. Use with caution in clients with diabetes. (Diuretics can cause hyperglycemia, especially in diabetics.)

Instruct client to:

- Monitor blood pressure prior to taking the diuretic.
- Stop medication if blood pressure is 90/60 mm Hg or below, and immediately notify healthcare provider.
- Call for assistance prior to getting out of bed or attempting to walk alone.
- Always rise slowly and avoid sudden position changes.
- Avoid driving or other activities requiring mental alertness or physical coordination until effects of the drug are known.
- Report dizziness or light-headedness.
- Immediately report any severe shortness of breath, frothy sputum, profound fatigue, or edema in extremities.
- Weigh at the same time (before breakfast) every day and report weight loss or gain of more than 2 lb in 24 hours.
- Consume enough plain water to remain adequately, but not overly, hydrated.
- Avoid excessive heat that contributes to excessive sweating and fluid loss.
- Note that increased urine output and decreased weight indicate that the drug is working.

For clients taking potassium-wasting diuretics, instruct to:

- Eat foods high in potassium such as bananas, apricots, kidney beans, sweet potatoes, and peanut butter.
- For clients taking potassium-sparing diuretics, instruct to:
- Avoid foods high in potassium.
- Consult with nurse before using vitamin/mineral supplements or electrolyte-fortified sports drinks.

For clients taking potassium-wasting diuretics, instruct to:

- Instruct client to report signs and symptoms of diabetes mellitus or elevated blood sugar to healthcare provider.

Prior to administration:

- Obtain a complete health history including allergies, drug history, and possible drug interactions.
- Obtain baseline vital signs.
- Auscultate chest sounds for rales or rhonchi indicative of pulmonary edema.
- Assess lower limbs for edema; note character/level (e.g., "++ pitting").
- Obtain blood and urine specimens for laboratory analysis.

Assessment

Potential Nursing Diagnoses

- Fluid Volume, Excess
- Fluid Volume, Deficient, Risk for
- Urinary Elimination, Impaired, related to diuretic use
- Fatigue
- Health Maintenance, Ineffective

Planning: Client Goals and Expected Outcomes

The client will:

- Demonstrate an understanding of the drug’s action by accurately describing drug side effects and precautions.
- Maintain normal serum electrolyte levels during drug therapy.

Implementation

Interventions and (Rationales) Client Education/Discharge Planning

Instruct client to:

- Inform laboratory personnel of diuretic therapy when providing blood or urine samples.
- Carry a wallet card or wear medical identification jewelry to indicate diuretic therapy.
- Monitor blood pressure prior to taking the diuretic.
- Stop medication if blood pressure is 90/60 mm Hg or below, and immediately notify healthcare provider.
- Call for assistance prior to getting out of bed or attempting to walk alone.
- Always rise slowly and avoid sudden position changes.
- Avoid driving or other activities requiring mental alertness or physical coordination until effects of the drug are known.
- Report dizziness or light-headedness.
- Immediately report any severe shortness of breath, frothy sputum, profound fatigue, or edema in extremities.
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- Note that increased urine output and decreased weight indicate that the drug is working.

Instruct client to:

- Eat foods high in potassium such as bananas, apricots, kidney beans, sweet potatoes, and peanut butter.
- For clients taking potassium-sparing diuretics, instruct to:
- Avoid foods high in potassium.
- Consult with nurse before using vitamin/mineral supplements or electrolyte-fortified sports drinks.
- Instruct client to report signs and symptoms of diabetes mellitus or elevated blood sugar to healthcare provider.
**NURSING PROCESS FOCUS Clients Receiving Diuretic Therapy (Continued)**

### Implementation

<table>
<thead>
<tr>
<th>Interventions and (Rationales)</th>
<th>Client Education/Discharge Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Monitor liver and kidney function. (Most diuretics are metabolized by the liver and excreted by the kidneys.)</td>
<td>Instruct client to:</td>
</tr>
<tr>
<td>- Observe for hypersensitivity reaction. (Some clients may be sensitive to diuretics.)</td>
<td>- Immediately report symptoms of metabolic imbalances: nausea and vomiting, profound weakness, lethargy, muscle cramps, depression/disorientation, hallucinations, heart palpitations, numbness or tingling in limbs, extreme thirst, or changes in urine output.</td>
</tr>
<tr>
<td>- Observe for signs of infection. (Certain diuretics may decrease white blood cell counts and the body’s ability to fight infection.)</td>
<td>- Keep all scheduled laboratory visits for tests.</td>
</tr>
<tr>
<td>- Monitor hearing and vision. (Loop diuretics are ototoxic. Thiazide diuretics in crease serum digitalis levels, which may produce visual changes.)</td>
<td>- Instruct client to immediately seek medical attention for difficulty breathing, throat tightness, hives or rash, muscle cramps, or tremors.</td>
</tr>
<tr>
<td>- Monitor for alcohol and caffeine use. (Alcohol increases the hypotensive action of some thiazide diuretics. Caffeine is a mild diuretic that could increase diuresis.)</td>
<td>- Instruct client to report any flulike symptoms: shortness of breath, fever, sore throat, malaise, joint pain, or profound fatigue.</td>
</tr>
<tr>
<td>- Monitor reactivity to light exposure. (Drug causes photosensitivity.)</td>
<td>- Instruct client to restrict consumption of alcohol and caffeine to prevent potentiation of drug.</td>
</tr>
</tbody>
</table>

### Evaluation of Outcome Criteria

Evaluate the effectiveness of drug therapy by confirming that client goals and expected outcomes have been met (see “Planning”).

- The client’s blood pressure is within normal limits.
- The client demonstrates an understanding of the drug’s action by accurately describing drug side effects and precautions.
- The client’s serum electrolyte levels are stable.

∞ See Table 23.4 for a list of drugs to which these nursing actions apply.

### TABLE 23.5 Calcium Channel Blockers for Hypertension

<table>
<thead>
<tr>
<th>Drug</th>
<th>Route and Adult Dose (max dose where indicated)</th>
<th>Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SELECTIVE: FOR BLOOD VESSELS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>amlodipine (Norvasc)</td>
<td>PO; 5–10 mg/day (max: 10 mg/day)</td>
<td>Flushed skin, headache, dizziness, peripheral edema, light-headedness, nausea, diarrhea</td>
</tr>
<tr>
<td>felodipine (Plendil)</td>
<td>PO; 5–10 mg/day (max: 20 mg/day)</td>
<td>Hepatotoxicity, MI, CHF, confusion, mood changes</td>
</tr>
<tr>
<td>nicardipine (Cardene)</td>
<td>PO; 20–40 mg/day (max: 120 mg/day)</td>
<td></td>
</tr>
<tr>
<td>nifedipine (Procardia, Adalat)</td>
<td>PO; 10–20 mg tid (max: 180 mg/day)</td>
<td></td>
</tr>
<tr>
<td><strong>NONSELECTIVE: FOR BOTH BLOOD VESSELS AND HEART</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>diltiazem (Cardizem, Dilacor, Tiamate, Triassic)</td>
<td>PO; 60–120 mg sustained release bid</td>
<td></td>
</tr>
<tr>
<td>isradipine (DynaCirc)</td>
<td>PO; 1.25–10 mg bid (max: 20 mg/day)</td>
<td></td>
</tr>
<tr>
<td>nisoldipine (Nisocor)</td>
<td>PO; 10–20 mg bid (max: 40 mg/day)</td>
<td></td>
</tr>
<tr>
<td>verapamil (Calan, Isoptin, Verelan)</td>
<td>PO; 80–160 mg tid (max: 360 mg/day)</td>
<td></td>
</tr>
</tbody>
</table>

*Italics* indicate common adverse effects; *underlining* indicates serious adverse effects.

are sometimes less responsive to drugs in other antihypertensive classes.

Contraction of muscle is regulated by the amount of calcium ion inside the cell. When calcium enters the cell through channels in the plasma membrane, muscular contraction occurs. CCBs block these channels and inhibit \( \text{Ca}^{2+} \) from entering the cell, limiting muscular contraction. At low doses, CCBs relax arterial smooth muscle, lowering peripheral