ethacrynic acid (eth-a-kry-nik as-id)

**Classification**
Therapeutic: diuretics
Pharmacologic: loop diuretics

**Pregnancy Category B**

**Indications**
Edema due to heart failure, hepatic impairment or renal disease. Short-term management of ascites due to malignancy, idiopathic edema, and lymphedema. Alternative diuretic in patients with an allergy to sulfonamides.

**Action**
Inhibits the reabsorption of sodium and chloride from the loop of Henle and distal renal tubule. Increases renal excretion of water, sodium, chloride, magnesium, hydrogen, and calcium. Effectiveness persists in impaired renal function.

**Therapeutic Effects:**
Diuresis and subsequent mobilization of excess fluid (edema, pleural effusions).

**Pharmacokinetics**
*Absorption:* Well absorbed after oral administration.
*Distribution:* Unknown.
*Protein Binding:* 90%.
*Metabolism and Excretion:* 35–40% metabolized by liver; 60% eliminated unchanged by kidneys.
*Half-life:* 2–4 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</td>
<td>30 min</td>
<td>2 hr</td>
<td>6–8 hr</td>
</tr>
<tr>
<td>IV</td>
<td>5 min</td>
<td>30 min</td>
<td>2 hr</td>
</tr>
</tbody>
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**Contraindications/Precautions**
Contraindicated in: Hypersensitivity; Hepatic coma or anuria.

**Use Cautiously in:**
Severe liver disease (may precipitate hepatic coma); Concurrent use with potassium-sparing diuretics may be necessary; Electrolyte depletion; Diabetes mellitus; Increasing azotemia; OB, Lactation: Safety not established; Geri: Possible increased risk of side effects at usual doses, especially hypotension and electrolyte imbalance.

**Adverse Reactions/Side Effects**

**Interactions**
*Drug-Drug:* Hypotension with antihypertensives, nitrites, or acute ingestion of alcohol; Risk of hypokalemia with other diuretics, amphotericin B, stimulant laxatives, and corticosteroids. May cause lithium to accumulate. May increase risk of digoxin toxicity and risk of arrhythmia in patients taking drugs that prolong the QT interval. May cause ototoxicity with aminoglycosides.

**Route/Dosage**
*PO (Adults):* 50–100 mg/day in 1–2 divided doses; may increase dose by 25–50 mg every few days until desired response (maximum dose: 400 mg/day). *PO (Children):* 1 mg/kg/dose once daily; may be increased every 2–3 days to a maximum of 3 mg/kg/day.
*IV (Adults):* 0.5–1 mg/kg/dose (maximum: 100 mg/dose); may repeat dose every 8–12 hr if needed.
*IV (Children):* 1 mg/kg/dose, may repeat dose if indicated every 8–12 hr.

**NURSING IMPLICATIONS**

**Assessment**
- Fluid status, intake and output ratios, amount and location of edema, lung sounds, skin turgor, and mucous membranes. Serial physical exam other health care professional if fever, dry mouth, weakness, hypotension, or oliguria occurs.
- Monitor BP and pulse before and during administration. Maintain frequency of prescription refills to determine compliance.

**Nursing Considerations**
-慎用。
Assess patients receiving digoxin for anorexia, nausea, vomiting, muscle cramps, paresthesia, and confusion. Patients taking digoxin are at increased risk of digoxin toxicity because of the potassium-depleting effect of the diuretic. Potassium supplements or potassium-sparing diuretics may be used concurrently to prevent hypokalemia.

Assess patient for tinnitus and hearing loss. Audiometry is recommended for patients on long-term high-dose IV therapy. Hearing loss is most common after rapid or high-dose IV administration in patients with decreased renal function or those taking other ototoxic drugs.

Geri: Diuretic use is associated with increased risk for falls in older adults. Assess fall risk and implement fall prevention strategies.

Lab Test Considerations: Monitor electrolytes, renal and hepatic function, serum glucose, and urea, acid levels before and periodically during therapy. May cause decreased serum sodium, potassium, calcium, and magnesium concentrations. May also cause increased BUN, serum glucose, creatinine, and uric acid levels.

Potential Nursing Diagnoses

Excess fluid volume (Indications)

Deficient fluid volume (Side Effects)

Implementation

If administering twice daily, give last dose no later than 5 pm to minimize disruption of sleep cycle.

Intermittent Infusion: Dilute vial in 25–50 mL of D5W, D5/0.9% NaCl, 0.9% NaCl, or LR. Use reconstituted solution within 24 hr. Rate: Administer at a rate not to exceed 10 mg/min to prevent ototoxicity. Use an infusion pump to ensure accurate dose.

Y-Site Compatibility: heparin, hydrocortisone sodium succinate, potassium chloride, vitamin B complex with C.

Patient/Family Teaching

Instruct patient to take ethacrynic acid as directed. Take missed doses as soon as possible, do not double doses.

Caution patient to change positions slowly to minimize orthostatic hypotension. Caution patient that use of alcohol, exercise during hot weather, or standing for long periods during therapy may enhance orthostatic hypotension.

Advise patient to consult health care professional regarding a diet high in potassium.

Advise patient to obtain weight at the same time each day (preferably in the morning after urinating) and to keep a daily log of the results. Advise patient to contact health care professional of weight gain more than 3 lbs in one day.

Advise patient to consult health care professional before taking OTC medication or herbal products concurrently with this therapy.

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

Advise patient to contact health care professional immediately if tremor/weakness, cramps, nausea, dizziness, confusion, or tingling of extremities occurs.

Advise patients with diabetes to monitor blood glucose closely; may cause increased blood glucose levels.

Emphasize the importance of routine follow-up examinations.

Geri: Caution older patients or their caregivers about increased risk for falls. Suggest strategies for fall prevention.

Evaluation/Desired Outcomes

Decrease in edema.

Decrease in abdominal girth and weight.

Increase in urinary output.