

Dosing Information for Loop Diuretics

Loop diuretics primarily inhibit the sodium-potassium-chloride cotransport system located within the ascending limb of the Loop of Henle. Inhibition of this ion transport system prevents the reabsorption of these ions and a subsequent diuresis occurs.

Although all loop diuretics have the same primary mechanism of action, various other actions of these agents differ. For example, furosemide and ethacrynic acid have demonstrated action in both the proximal and distal tubules, while bumetanide has exhibited indirect effects on the proximal tubule. Torsemide exerts no action at the proximal tubule, and this characteristic may account for the decreased kaliuresis observed with this agent.

The mechanism of action of loop diuretics explains the common electrolyte abnormalities that often occur following administration; however, some of these agents predispose the patient to an increased amount of metabolic alterations. The elimination of potassium, hydrogen, calcium, magnesium, bicarbonate ammonium and possibly phosphate is enhanced following the administration of furosemide. Bumetanide also enhances the elimination of calcium, magnesium and phosphate in addition to its primary effects on the ioncotransport system.

Torsemide is an anilinopyridine sulfonyleurea derivative that has exhibited a pharmacologic property not demonstrated by other loop diuretics. Inhibition of chloride conductance from the peritubular surface of the nephron occurs with this particular agent. However, at the present time, the clinical relevance of this characteristic remains unproven.

Diuretic (Oral)	Bioavailability (%)	Half-Life (min)	Onset of Action (min)	Duration (hr)	Relative Potency	Dosage
Furosemide Lasix	~60% Lower with Food	~90 65 R 35 M	within 30	4-6	40 mg (\$4.29/month)	Edema: 20–80 mg initially; if no satisfactory response, readminister in 6–8 hours. Increase in increments of 20 mg or 40 mg until adequate diuresis. Maximum dose is 2000 mg/d. Hypertension: 40 mg twice a day; adjust dose according to patient response.
Ethacrynic acid Not a sulfonamide	~100	60 50 R 50 M	within 30	4-6	~25 mg (\$15.90/month)	Hypertension: Initially 50–200 mg daily in single or divided doses. Dosage adjustments in 25–50 mg increments. Doses of 200 mg twice daily have been administered in refractory edema.
Bumetanide Bumex	~80% Lower with Food	60–90 70 R 30 M	30–60	4–6	~ 1 mg (\$8.59/Month)	Hypertension: Initially 0.5–2 mg/day; if not adequate may repeat dose every 4–5 hours
Torsemide Demadex	~80 No food effect	210 20 R 80 M	within 60	6–8	~10 mg (\$31.6/month)	Congestive Heart Failure/Chronic Renal Failure : Titrate dose by doubling dose until adequate diuresis is obtained. Single doses >200 mg have not been adequately studied. Hepatic Cirrhosis: Initially 5 mg or 10 mg once daily in conjunction with an aldosterone antagonist or a potassium-sparing diuretic. Titrate to response by doubling the dose. Single doses >40 mg have not been adequately studied. Hypertension: Initially 5 mg once daily. May increase to 10 mg daily in 4–6 weeks if no response.

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Important Note: This document is a guideline, and not a policy statement. Always use clinical judgment when making decisions for an individual patient.