

FUROSEMIDE

SYNONYMS	Frusemide
BRAND NAME	LASIX, LASIX HIGH DOSE, FUROSEMIDE BAXTER
DRUG CLASS	Loop diuretic
AVAILABILITY	Ampoule contains 20 mg/2 mL, 40 mg/4 mL or 50 mg/5 mL of furosemide. Also contains sodium chloride and sodium hydroxide. Baxter brand also contains hydrochloric acid. The solution is clear and colourless. ¹ The 20 mg/2 mL and 40 mg/4 mL ampoules contain 0.16 mmol/mL of sodium. ¹ Lasix High Dose ampoule contains 250 mg/25 mL of furosemide. Also contains mannitol and sodium hydroxide. Contains 0.03 mmol/mL of sodium. ¹ The solution is clear and colourless. ¹
pH	8.0–9.3 ¹
PREPARATION	Not required
STABILITY	Ampoule: store below 25 °C. Protect from light. Crystals may form at low temperatures and can be dissolved with gentle warming to 40 °C. ¹ Discard solutions that are yellow. ² Infusion solution: stable for 24 hours at 2 to 8 °C or at 25 °C. ¹
ADMINISTRATION	
IM injection	Suitable only if IV access is not possible. Not suitable for acute conditions. Inject undiluted. ¹
SUBCUT injection	Suitable in palliative care patients as an intermittent injection or as a continuous subcutaneous infusion. ³
IV injection	Inject doses up to 80 mg slowly over 2 to 5 minutes. ¹ Higher doses must be given by slow IV infusion to reduce the risk of ototoxicity. ¹ See SPECIAL NOTES
IV infusion	Dilute the dose with 50–250 mL of a compatible fluid and infuse at a maximum rate of 4 mg/minute. ¹ Lasix High-Dose may be infused undiluted in fluid-restricted patients. ¹ Use a rate-controlled infusion pump.
IV use for infants and children	Use undiluted or dilute to 1–2 mg/mL and infuse over at least 20 minutes or as a continuous infusion. ⁴ Maximum rate is 0.5 mg/kg/minute or 4 mg/minute. ^{4,5} See SPECIAL NOTES
COMPATIBILITY	
Fluids	Glucose 5% ^{1,2} , Hartmann's ^{1,2} , Plasma-Lyte 148 via Y-site ⁶ , sodium chloride 0.9% ^{1,2} . Do not mix furosemide with solutions that have a pH of less than 5.5. ¹
Y-site	At 3 mg/mL of furosemide: amifostine ² , anidulafungin ² , bivalirudin ² , ceftaroline fosamil ² , ceftolozane-tazobactam ² , dexmedetomidine ² , granisetron ² , linezolid ² , micafungin ² , piperacillin-tazobactam (EDTA-free) ² At 5 mg/mL of furosemide: azathioprine ⁷ , aztreonam ⁷ , calcium chloride ⁷ , calcium gluconate ⁷ , cefalotin ⁷ , cefazolin ⁷ , cefotaxime ⁷ , cefoxitin ⁷ , ceftazidime ⁷ , ceftriaxone ⁷ , ciclosporin ⁷ , clindamycin ⁷ , dexamethasone ⁷ , digoxin ⁷ , ephedrine sulfate ⁷ , fentanyl ⁷ , ganciclovir ⁷ , hydrocortisone sodium succinate ⁷ , insulin (Novorapid) ⁸ , lidocaine ⁷ , methylprednisolone sodium succinate ⁷ , ranitidine ⁷ , sodium bicarbonate ⁷ , suxamethonium ⁷ At 10 mg/mL of furosemide: amikacin ² , argatroban ² , foscarnet ² , heparin sodium ² , levosimendan ⁹ , metoprolol ² , potassium chloride ² , sodium nitroprusside ² , tirofiban ² , tobramycin ²

INCOMPATIBILITY

Fluids Do not mix furosemide with solutions that have a pH of less than 5.5.¹

Drugs Atracurium⁷, azithromycin², benzatropine¹⁰, caffeine citrate², caspofungin², ciprofloxacin², droperidol², eptifibatid¹⁰, erythromycin², esmolol², filgrastim², fluconazole², gentamicin², glycopyrronium¹⁰, haloperidol lactate¹⁰, hyaluronidase¹, hydralazine², isavuconazole², ketamine¹⁰, labetalol², metaraminol⁷, metoclopramide², midazolam², milrinone², mivacurium¹⁰, moxifloxacin¹⁰, mycophenolate mofetil¹⁰, nicardipine¹⁰, ondansetron², pentamidin¹⁰, pethidine¹, phentolamine¹⁰, phenylephrine², promethazine⁷, protamine¹⁰, pyridoxine¹⁰, quinine¹, rocuronium¹, thiamine¹⁰, vancomycin¹⁰, vecuronium², verapamil¹⁰

SPECIAL NOTES

Administration of high doses at a rate faster than 4 mg/minute may result in tinnitus, vertigo and deafness, especially when combined with other ototoxic drugs or in patients with severe renal impairment.¹

When given by IV injection prior to a renal scan in nuclear medicine faster rates are used. Check your local guidelines.

REFERENCES

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