Allopurinol Sodium

Brand names	Aloprim
Medication error potential	Look-alike, sound-alike drug names USP reports that allopurinol has been confused with atenolol and enalapril. No patient harm resulted.[1]
Contraindications and warnings	**Contraindications:** Patients who experienced a severe reaction to a previous dose should not receive allopurinol.[2] Discontinue at the first appearance of a rash.[2,3] (See the Comments section.) Hypersensitivity reactions are rare.[3]
Infusion-related cautions	None reported
Dosage	**Prevention/treatment of hyperuricemia secondary to neoplastic disorders:** Treatment is started 24–48 hours prior to chemotherapy.[2-5] Maintain adequate hydration to avoid potential formation of xanthine calculi and prevent renal precipitation of urates.[2,3] **Children and adolescents:** 200 mg/m^2/day once daily or in equally divided intermittent IV infusions administered at 6-, 8-, or 12-hour intervals[2-5] **Alternate dosing:** 200–400 mg/m^2/day (5–10 mg/kg/day) once daily or in 3 divided doses[2-6] **Inhibition of free radical production** **Postasphyxial brain injury in newborns:** 20 mg/kg given within 4 hours of life and again 12 hours later.[7,8] Allopurinol initiated after 4 hours of life may not be beneficial in treating severe birth asphyxia.[8] **Severely hypoxic neonates on extracorporeal membrane oxygenation:** 10 mg/kg prior to cannulation followed by 5 mg/kg q 8 hr for 72 hours after initiation of bypass[9] **Congenital heart disease necessitating cardiopulmonary bypass (CPB):** No difference in pharmacokinetic parameters or decrease in uric acid concentration has been noted in 12 neonates with hypoplastic left heart syndrome who received 5 or 10 mg/kg over 20 minutes.[10] 5 mg/kg given at least 16 hours preoperatively, 5 mg/kg given 8 hours preoperatively, 10 mg/kg given at 0700 the morning of surgery, 20 mg/kg intraoperatively via CPB circuit, and nine postoperative doses of 5 mg/kg q 8 hr decreased morbidity in neonates with hypoplastic left-heart syndrome.[11]
Dosage adjustment in organ dysfunction	**CrCl 10–20 mL/min:** 200 mg/day or reduce dosage to 50% of the usual dose.[2,3] **CrCl 3–10 mL/min:** 100 mg/day or reduce dosage to 30% of usual dose.[2,3] **CrCl <3 mL/min:** 100 mg/day at extended intervals of greater than 24 hours[2,3] **Management of hyperuricemia associated with chemotherapy**[12] **CrCl 30–50 mL/min/1.73 m^2:** Administer 50% of normal dose. **GFR 10–29 mL/min/1.73 m^2:** Administer 50% of normal dose. **GFR <10 mL/min/1.73 m^2:** Administer 30% of normal dose. **Intermittent hemodialysis:** Administer 30% of normal dose. **Peritoneal dialysis:** Administer 30% of normal dose. **Continuous renal replacement therapy (CRRT):** Administer 50% of normal dose.

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Maximum dosage	A 3-year-old with acute lymphoblastic leukemia (ALL) received 410 mg/m^2/day for 11 days, and a 4-year-old with ALL received a cumulative dose of 8.8 g/m^2 over a 6-month period as an outpatient.[5] 600 mg/day in *adults* and children[2]
Additives	Contains ~85 mg sodium/500-mg vial.
Suitable diluents	SW to reconstitute, NS, or D5W to dilute.[2,3,11] Sodium bicarbonate-containing solutions should not be used as a diluent.[2,3,13]
Maximum concentration	≤6 mg/mL[2,3] Two pharmacokinetics studies evaluated six healthy *adult* volunteers in each study. One study infused a single dose of 20 mg/mL over 2 minutes[14] and the other a single dose of 10 mg/mL over 15 minutes.[15]
Preparation and delivery	**Preparation:** Reconstitute by adding 25 mL SW.[2,3] The pH of the reconstituted vial ranges from 11.1 to 11.8 and must be diluted with NS or D5W.[2,3] Do not refrigerate reconstituted or diluted product. **Stability:** Administer within 10 hours of reconstitution. Contains no preservatives.
IV push	Not recommended
Intermittent infusion	≥30 minutes[4,5,9,10]
Continuous infusion	The daily dose may be given as a continuous infusion.[3,5]
Other routes of administration	Not indicated
Comments	Ensure adequate urine flow by providing sufficient fluid intake.[2,3] **Adverse drug effects:** A 15-year-old boy with Williams syndrome receiving oral allopurinol for 6 weeks developed acute pure red-cell aplasia that resolved when the drug was discontinued.[16] Hemolytic anemia has occurred with the administration of allopurinol in patients diagnosed with pediatric tubulointerstitial nephritis.[17] Risk factors for developing allopurinol induced adverse events include tumor lysis syndrome, chronic kidney disease, hypertension, hyperlipidemia, increased serum cholesterol, elevated liver enzymes, and use of statins or angiotensin receptor antagonists.[18] **Drug interactions:** Azathioprine and mercaptopurine doses should be reduced by 25% to 33% and subsequent dosage based on patient response and occurrence of toxicity.[2,3] The dose may need to be increased with concomitant use of drugs that increase urate concentration.[2,3] The incidence of rash is increased with concomitant ampicillin or amoxicillin use.[2,3] Increased concentrations of cyclosporine have been reported with allopurinol use.[2,3]