Granisetron HCl

Brand names	Kytril
Medication error potential	Look-alike, sound-alike drug names USP reports that granisetron has been confused with ondansetron.[1]
Contraindications and warnings	**Contraindications:** Patients with hypersensitivity to the drug or its components.[2] **Warnings:** Hypersensitivity reactions may occur in patients with hypersensitivity to other 5-hydroxytryptamine 3 (5-HT_3) antagonists.[2] QT prolongation has been reported with granisetron. Use with caution in patients with preexisting arrhythmias, cardiac disease, receiving cardiotoxic chemotherapy, with concomitant electrolyte abnormalities, or on medications that may lead to QT prolongation.[2] Serotonin syndrome has been reported with granisetron both alone and when combined with other serotonergic agents.[2]
Infusion-related cautions	The data on the effect of granisetron on ECG are inconsistent. One study in 22 children receiving 40 mcg/kg infused over 30 seconds following chemotherapy for acute lymphoblastic leukemia (ALL) demonstrated transient changes on ECG but no clinical symptoms.[3] Another study looked at 16 patients who were not receiving cardiotoxic chemotherapy; granisetron 40 mcg/kg caused bradycardia only; however, there were no clinically significant cardiac effects at 10 or 40 mcg/kg.[4] In *adults*, a 30-second or 5-minute infusion of 10 mcg/kg resulted in a statistically significant prolongation in the QTc interval; however, no clinical symptoms were reported.[5] In four of 12 *adults*, bradycardia, integral change of P-waves, junctional escape beat, and atrioventricular block occurred.[6] Doses of 80 mcg/kg or 120 mcg/kg, in single or split doses, produced no clinically significant effects on ECG, pulse rate, or blood pressure in *adults*.[7]
Dosage	**Prevention of chemotherapy-induced nausea and vomiting:** 10, 20, or 40 mcg/kg,[2,8,9-16] given 5[11,12]–30[8-10,13,14,18] minutes prior to chemotherapy. Maximum dose 1 mg. For breakthrough nausea and vomiting in the first 24 hours of chemotherapy, the dose can be repeated.[19] The inclusion of dexamethasone is recommended.[20] **Prevention of postoperative nausea and vomiting:** 20–40 mcg/kg as a single dose before induction of surgery, immediately before reversal of anesthesia or postoperatively, not to exceed 1 mg. Maximum dose 0.6 mg. Doses of 10, 20, 40, 80, or 100 mcg/kg have been compared in children.[21-24] A dose of 40 mcg/kg was more effective than a dose of 10 mcg/kg.[21] Doses of 80 or 100 mcg/kg were no more effective than 40 mcg/kg.[21,22] **Prevention of shivering during pediatric spinal anesthesia:** 10 mcg/kg given once over 5 minutes just prior to spinal puncture.[25] The combination of granisetron and dexamethasone was more effective than granisetron alone.[26,27] In *adults*, doses of 0.1, 1, and 3 mg were studied and 3 mg was no more effective than 1 mg.[2]
Dosage adjustment in organ dysfunction	No dosage adjustment is needed for renal or hepatic dysfunction.[2] Clearance is significantly decreased in hepatic impairment; however, the pharmacokinetics of granisetron are highly variable and larger doses are well tolerated.[2]
Maximum dosage	Although doses of 100 mcg/kg have been studied,[24] 40 mcg/kg is the usual maximum dose.[2,8,9]
Additives	The 4-mL multidose vials (1 mg/mL) contain benzyl alcohol.[2] (See Appendix C for specific information about benzyl alcohol toxicity in neonates.)

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Suitable diluents	D5W, D5½ NS, NS[2,28]
Maximum concentration	Undiluted (0.1 mg/mL, preservative free, or 1 mg/mL, multidose vial)
Preparation and delivery	**Stability:** Stable for 24 hours when diluted with D5W or NS and stored at room temperature.[26] Once the multidose vial has been entered, it should be used or discarded in 30 days.[2] **Compatibility:** See Appendix D for PN compatibility information.
IV push	Over 30 seconds (undiluted) or over 2–5 minutes.[2,10,21] A dose of 40 mcg/kg (concentration unspecified) was infused over 30 seconds in children.[3]
Intermittent infusion	Over 30 minutes[9,10,13]
Continuous infusion	Although continuous infusion has been used in *adults*,[29] continuous infusion has not been reported in pediatric patients.
Other routes of administration	Has been given IM in *adults.*[30,31]
Comments	A decrease in effectiveness was noted with prolonged use.[14] Response appears to be best in children <6 years of age[13] and is least in girls.[14] **Pharmacokinetics:** Pharmacokinetic parameters were significantly more variable in children with ALL who were given 1–3 mg (48.6–85.7 mcg/kg) compared to *adults* with lung cancer who were given 3 mg (41.7–53.6 mcg/kg).[32]

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