granisetron (oral and IV)  
(gra-ne-set-ron)

granisetron (transdermal)

Classification

Therapeutic: antiemetics
Pharmacologic: 5-HT3 antagonists

Pregnancy Category: B

Indications

PO: Prevention of nausea and vomiting due to emetogenic chemotherapy or radiation therapy. Prevention and treatment of postoperative nausea and vomiting. Transdermal: Prevention of nausea and vomiting due to moderately/highly emetogenic chemotherapy.

Action

Blocks the effects of serotonin at receptor sites (selective antagonist) located in vagal nerve terminals and in the chemoreceptor trigger zone in the CNS. Therapeutic Effects: Decreased incidence and severity of nausea and vomiting following emetogenic chemotherapy, radiation therapy or surgery.

Pharmacokinetics

Absorption: 50% absorbed following oral administration; transdermal enters systemic circulation via passive diffusion through intact skin. Distribution: Distributes into erythrocytes; remainder of distribution is unknown. Protein Binding: 65%. Metabolism and Excretion: Mostly metabolized by the liver; 12% excreted unchanged in urine. Half-life: Patients with cancer—10–12 hr (range 0.9–31.1 hr); healthy volunteers—3–4 hr (range 0.9–15.2 hr); geriatric patients—7.7 hr (range 2.6–17.7 hr).

Contraindications/Precautions

Contraindicated in: Hypersensitivity; Some products contain benzyl alcohol; avoid use in neonates.

Use Cautiously in: History of arrhythmias or conduction disorders; OB, Lactation: Safety not established; Pedi: Safe use of IV route not established in children <2 yr; safe use of PO or transdermal route not established in children 2–18 yr.

Adverse Reactions/Side Effects


Interactions

Drug-Drug: ↑ risk of extrapyramidal reactions with other agents causing extra-pyramidal reactions; ↑ risk of QT interval prolongation with other agents causing QT interval prolongation.

Route/Dosage

Prevention of Nausea and Vomiting Due to Emetogenic Chemotherapy

PO (Adults): 1 mg twice daily; 1st dose given at least 60 min prior to chemotherapy and 2nd dose 12 hr later only on days when chemotherapy is administered; may also be given as 2 mg once daily at least 8 hr prior to chemotherapy.

IV (Adults and Children 2–16 yr): 10 mcg/kg within 30 min prior to chemotherapy or 20–40 mcg/kg/day divided once or twice daily (maximum: 5 mg/dose or 9 mg/day).

Transdermal (Adults): One 3.4 mg patch (delivers 3.1 mg/24 hr) applied up to 48 hr prior to chemotherapy. Leave in place for at least 24 hr following chemotherapy, may be left in place for additional 7 days.

TIME/ACTION PROFILE

ROUTE ONSET PEAK DURATION

PO rapid 60 min 24 hr

IV 1–3 min 30 min up to 24 hr

TD* unknown 48 hr unknown

* Blood levels

Common side effects

CNS: Headache, agitation, anxiety, CNS stimulation, drowsiness, vertigo.

CV: Hypotension, QT interval prolongation.

GI: Constipation, diarrhea, elevated liver enzymes, taste disorder.

Derm: Photosensitivity.

Misc: Anaphylactoid reactions, fever.
Prevention of Nausea and Vomiting Associated with Radiation Therapy

PO (Adults): 2 mg once or twice within 1 hr of radiation therapy.

Prevention and Treatment of Postoperative Nausea and Vomiting

IV (Adults): Prevention—1 mg prior to induction of anesthesia or just prior to reversal of anesthesia. Treatment—1 mg.

IV (Children 4 yr): 20–40 mcg/kg as a single dose (maximum: 1 mg).

NURSING IMPLICATIONS

Assessment

● Assess patient for nausea, vomiting, abdominal distention, and bowel sounds prior to and following administration.

● Assess for extrapyramidal symptoms (involuntary movements, facial grimacing, rigidity, shuffling walk, trembling of hands) during therapy. This occurs rarely and is usually associated with concurrent use of other drugs known to cause this effect.

● Monitor ECG in patients with HF, bradycardia, underlying heart disease, renal impairment and elderly patients.

● Transdermal: Monitor application site. If allergic, erythematous, macular, or papular rash or pruritus occurs, remove patch.

● Lab Test Considerations: May cause q AST and ALT levels.

Potential Nursing Diagnoses

● Imbalanced nutrition: less than body requirements (Indications)

Implementation

● Correct hypokalemia and hypomagnesemia before administering.

● For chemotherapy or radiation, granisetron is administered only on the day(s) chemotherapy or radiation is given. Continued treatment when not on chemotherapy or radiation therapy has not been found to be useful.

● PO: Administration 1st dose up to 1 hr before chemotherapy or radiation therapy and 2nd dose 12 hr after the first.

● 2 tsp oral solution is equal to 2 mg granisetron.

IV Administration

● pH: 4.0–6.0

● Direct IV: Diluent: May be administered undiluted or diluted in 20–50 mL of 0.9% or D5W. Solution should be prepared at time of administration but is stable for 24 hr at room temperature. Concentration: Up to 1 mg/mL. Rate: Administer undiluted granisetron over 30 sec or as a diluted solution over 5 min.

Y-Site Compatibility: alfentanil, allopurinol, amifostine, amiodarone, amnesteem, ampicillin, amphotericin B cholesteryl, amphotericin B lipid complex, amphotericin B liposome, ampicillin, ampicillin sodium, amantadine, aminophylline, aprotinin, atracurium, aztreonam, bivalirudin, bleomycin, bumetanide, busulfan, calcium acetate, calcium chloride, calcium gluconate, capreomycin, cefazolin, cefepime, cefo-

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**granisetron (transdermal)**

- **Precautions:** Use with caution in patients with pre-existing CNS disorders. Inform patients of the potential for grand mal seizures in children and adolescents, and that they may occur in adults. Instruct patient to avoid driving or operating machinery until CNS effects are known. Inform patient that seizures may occur even after discontinuation of therapy.

- **Additive Incompatibility:** Granisetron should not be admixed with other medications.

- **Transdermal:** Apply system clear, dry, intact healthy skin on upper outer arm 24-48 hr before chemotherapy. Do not use cream, lotions, or oils that may keep patch from sticking. Do not apply to skin that is red, irritated, or damaged. Apply immediately after removing from package. Do not cut patch into pieces. Remove liner from adhesive layer and press firmly in place with palm of hand for 30 sec, especially around the edges, to make sure contact is complete. Patch should be worn throughout chemotherapy. If patch does not stick, bandages or medical adhesive tape may be applied on edges of patch; do not cover patch with tape or bandages or wrap completely around arm. Patient may shower and wash normally while wearing patch; avoid swimming, strenuous exercise, sauna, or tanning beds during and for 10 days following removal of patch.

- **Patient/Family Teaching**
  - Instruct patient to take granisetron as directed.
  - Advise patient to notify health care professional immediately if involuntary movement of eyes, face, or limbs occurs.
  - May cause dizziness and drowsiness. Caution patient to avoid driving and other activities requiring alertness until response to medication is known.
  - Advise patient to notify health care professional of abnormal heart rate or rhythm (racing heart beat, shortness of breath, dizziness, fainting) occur.
  - Advise patient to consult health care professional prior to taking any other Rx, OTC, or herbal products.
  - Advise female patient to notify health care professional if pregnancy is planned or suspected or if breast feeding.

- **Special Tests:** None.

- **Transdermal:** Inform patient on correct application, removal, and disposal of patch. Advise patient to read Patient Information sheet prior to using and with each Rx refill in case of new information. Inform patient that additional granisetron should not be taken during patch application unless directed by health care professional.

- **Y-Site Incompatibility:** amphotericin B colloidal, dantrolene, dexamethasone, fentanyl, lidocaine, meperidine, morphine, piperacillin-tazobactam, propofol, thiopental, thiotepa, ticarcillin/clavulanate, tigecycline, tirofiban, tobramycin, topotecan, trastuzumab, trimethoprim/sulfamethoxazole, vancomycin, vasopressin, vecuronium, verapamil, vinblastine, vincristine, vinorelbine, voriconazole, zidovudine, zoledronic acid.

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