irinotecan

**Classification:**
Antineoplastics

**Pharmacologic:** enzyme inhibitors

**Pregnancy Category D**

**Indications**
Metastatic colorectal cancer (with 5-fluorouracil and leucovorin).

**Action**
Interferes with DNA synthesis by inhibiting the enzyme topoisomerase.

**Indications**
Pregnancy Category D

**Pharmacologic:** antineoplastics

**Therapeutic:**

**Interactions**
Drug-Drug: Combination with fluorouracil may result in serious toxicity (dehydration, neutropenia, sepsis).

**Route/Dosage**

**Contraindications/Precautions**
Contraindicated in: Hypersensitivity; Hereditary fructose intolerance (contains sorbitol); Concurrent use of ketoconazole and St. John’s wort; Concurrent use of rifabutin and rifampin; OB or OB-Lactation: Pregnancy or lactation. Use Cautiously in: Previous pelvic or abdominal irradiation or age ≥ 65 yr (risk of myelosuppression); Presence of infection, underlying bone marrow depression, or concurrent chronic illness; History of prior pelvis/abdominal irradiation and/or chemotherapy; ≥ 1 mg/dL (initial dose reduction recommended). Use carefully in: Patients with genetically reduced UGT1A1 activity (risk of myelosuppression); OB patients with childbearing potential. OB: Safety not established.

**Drug-Drug: Combination with fluorouracil may result in serious toxicity (dehydration, neutropenia, sepsis).

**Pharmacokinetics**

**Absorption:** PO: unknown. IV unknown 21–29 days 27–34 days

**Half-life:** 6 hr.

**Distribution:** IV administration results in complete bioavailability.

**Metabolism and Excretion:** Converted by the liver to SN-38, its active metabolite; small amounts excreted by kidneys.

**Protein Binding:** 30–68%; irinotecan—95%. SN-38 (active metabolite)—95%.

**Adverse Reactions/Side Effects**

**Skin:** Rash, Stevens-Johnson syndrome, toxic epidermal necrolysis (contains sorbitol); Concurrent use with ketoconazole and St. John’s wort; Concurrent use of rifabutin and rifampin; Concurrent use of phenytoin and carbamazepine; Concurrent use of phenobarbital and St. John’s wort; Concurrent use of P-glycoprotein inhibitors.

**CV:** Edema; Hypertension; Hypotension; Arrhythmias (with concomitant use of poisons); Use with caution in patients with a history of hypertension.

**EENT:** Athetosis, paresthesia, retinal disorders, visual disturbances, amblyopia.

**Resp:** Hypersensitivity; Interstitial pneumonitis.

**Gastrointestinal:** Nausea, vomiting, diarrhea, constipation, ileus, abdominal pain/cramping, anorexia, flatulence, anemia.

**Hematologic:** Neutropenia, thrombocytopenia, anemia, pancytopenia.

**Misc:** Fever, chills, myalgias, back pain, Nausea, chills, fever.

**Contraindications/Precautions**

**Contraindicated in:** Myelosuppression; Discourage repeated courses to prevent organ toxicity.

**Pregnancy or lactation.** Use with caution in pregnant patients.

**Lactation:** Discontinue.

**OB:** Discontinue. OB-Lactation: Discontinue. OB: Safety not established.

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100 mg/m² once weekly for 4 wk, followed by a 2-wk rest period. Cycle may be repeated using doses which depend on patient tolerance and degree of toxicity encountered.

● Regimen 2 (Infusional regimen)—Weekly dosage schedule—Initiate therapy at lower dose (100 mg/m²); dose may be escalated to recommended dose (180 mg/m²) if patient tolerance and degree of toxicity encountered allow.

IV (Adults Patients with Reduced UGT1A1 Activity): Regimen 1 (Bolus regimen)—Weekly dosage schedule—Initiate therapy at lower dose (100 mg/m²); dose may be escalated to recommended dose (180 mg/m²) if patient tolerance and degree of toxicity encountered allow.

300 mg/m² once every 3 wk. Cycle may be repeated using doses that depend on patient tolerance and degree of toxicity encountered.

Assess for cholinergic symptoms (rhinitis, increased salivation, miosis, lacrimation, diaphoresis, flushing, abdominal cramping, diarrhea) during therapy. Atropine 0.25–1 mg IV may be given to decrease symptoms. Potentially life-threatening diarrhea may occur more than 24 hr after a dose and may be accompanied by severe dehydration and electrolyte imbalance. Loperamide 4 mg initially, followed by 2 mg every 2 hr until diarrhea ceases for at least 12 hr (or 4 mg every 3 hr if given during sleeping hours) should be administered promptly to treat late-occurring diarrhea. Do not administer loperamide at these doses for >28 hr. Careful fluid and electrolyte replacement should be instituted to prevent complications. Subsequent doses should be deferred in patients with active diarrhea until diarrhea is resolved for 24 hr. If diarrhea is grade 2, 3, or 4, decrease subsequent doses of irinotecan.

● Monitor for bone marrow depression. Assess for bleeding (melena, petechiae, guaiac stools, urine, and emesis) and avoid IM injections and taking rectal temperatures if platelet count is low. Apply pressure at venipuncture site for 10 min. Assess for signs of infection during neutropenia. Monitor for increased frequency of respirations. Monitor for increased tongue, abdomen, and orthostatic hypotension.

● Monitor closely for the development of diarrhea. Toxicities may occur.

● Lab Test Considerations: Monitor CBC with differential and platelet count 0.25–1 mg subcut or IV may be used to prevent or treat symptoms.

● Monitor critically ill patients for signs of respiratory failure.

● Nausea and vomiting are common. Pretreatment with dexamethasone 10 mg along with agents such as ondansetron or granisetron should be started on the same day as irinotecan at least 30 min before administration. Prochlorperazine may be used on subsequent days but may increase risk of akathisia if given on the same day as irinotecan.

● Monitor vital signs frequently during administration.

● Monitor for increased tongue, abdomen, and orthostatic hypotension.

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Potential Nursing Diagnoses

Risk for infection (Adverse Reactions)

Implementation

● Prepare solution in a biological cabinet. Wear gloves, gown, and mask while handling IV medication. Discard IV equipment in specially designated containers.

IV Administration

● pH: 3.0–3.8.

● Concentration Incompatibility: Dilute before infusion with DSW or 0.9% NaCl. Solution is pale yellow. Do not administer solutions that are cloudy or contain particulate matter. Solution is stable for 24 hr at room temperature or 48 hr if refrigerated. To prevent microbial contamination, solutions should be used within 24 hr of dilution if refrigerated or 6 hr at room temperature. Do not refrigerate solutions diluted with 0.9% NaCl.

● Rate: Administer dose over 90 min.

● Y-Site Compatibility: alfentanil, amifostine, amikacin, aminophylline, amiodarone, ampicillin, ampicillin/sulbactam, anidulafungin, argatroban, atracurium, azithromycin, aztreonam, bivalirudin, bleomycin, bumetanide, buprenorphine, butorphanol, calcium chloride, calcium gluconate, carboplatin, caspofungin, cefazolin, cefotetan, cefoxitin, ceftazidime, cefuroxime, ciprofloxacin, cisatracurium, cisplatin, clindamycin, cyclophosphamide, cyclosporine, cytarabine, dexamethasone, docetaxel, dolasetron, dopamine, doxorubicin, doxycycline, epinephrine, etoposide, etoposide phosphate, famotidine, fenoldopam, fentanyl, fluconazole, fosfomycin, gentamicin, granisetron, haloperidol, heparin, hetastarch, hydralazine, hydrocortisone, hydromorphone, idarubicin, imipenem/cilastatin, insulin, isoproterenol, ketorolac, labetalol, leucovorin, levofloxacin, levonorgestrel, linezolid, lorazepam, magnesium sulfate, mannitol, meperidine, meropenem, mesna, metaraminol, methyldopate, metoclopramide, metoprolol, metronidazole, midazolam, milrinone, mitoxantrone, morphine, nalbuphine, naloxone, nesiritide, nicardipine, nitroglycerin, norepinephrine, octreotide, ondansetron, oxaliplatin, paclitaxel, palonosetron, pancuronium, pantoprazole, pentamidine, pentazocine, pentobarbital, phenobarbital, phenylephrine, potassium acetate, potassium chloride, potassium phosphates, procainamide, prochlorperazine, promethazine, quinupristin/dalfopristin, ranitidine, remifentanyl, rituximab, rocuronium, sodium acetate, sodium bicarbonate, sodium phosphates, succinylcholine, sufentanil, tacrolimus, teniposide, theophylline, thiotepa, ticarcillin/clavulanate, tigecycline, topotecan, tocainide, tobramycin, tolazoline, trimethoprim/sulfamethoxazole, vancomycin, vasoressin, vecuronium, verapamil, vinorelbine, voriconazole, zidovudine, zoledronic acid.

● Y-Site Incompatibility: acyclovir, aloe vera gel, amphotericin B colloidal, amphotericin B lipid complex, amphotericin B liposome, cefepime, cefotaxime, ceftazidime, chloramphenicol, chlorpromazine, diazepam, dexamethasone, dextran 70, diltiazem, diphenhydramine, doxorubicin, droperidol, fluorouracil, furosemide, ganciclovir, gentamicin, glycopyrrolate, heparin, hetastarch, ketorolac, labetalol, leucovorin, levofloxacin, levonorgestrel, linezolid, lorazepam, magnesium sulfate, mannitol, meperidine, meropenem, mesna, metaraminol, methyldopate, metoclopramide, metoprolol, metronidazole, midazolam, milrinone, mitoxantrone, morphine, nalbuphine, naloxone, nesiritide, nicardipine, nitroglycerin, norepinephrine, octreotide, ondansetron, oxaliplatin, paclitaxel, palonosetron, pancuronium, pantoprazole, pentamidine, pentazocine, pentobarbital, phenobarbital, phenylephrine, potassium acetate, potassium chloride, potassium phosphates, procainamide, prochlorperazine, promethazine, quinupristin/dalfopristin, ranitidine, remifentanyl, rituximab, rocuronium, sodium acetate, sodium bicarbonate, sodium phosphates, succinylcholine, sufentanil, tacrolimus, teniposide, theophylline, thiotepa, ticarcillin/clavulanate, tigecycline, topotecan, tocainide, tobramycin, tolazoline, trimethoprim/sulfamethoxazole, vancomycin, vasoressin, vecuronium, verapamil, vinorelbine, voriconazole, zidovudine, zoledronic acid.

● Additive Incompatibility: Information unavailable. Do not admix with other solutions or medications.

Patient/Family Teaching

● Instruct patient to report occurrence of diarrhea to health care professional immediately, especially if it occurs more than 24 hr after dose. Diarrhea may be accompanied by severe dehydration and electrolyte imbalance. It may be life-threatening and should be treated promptly. Patient should have loperamide for treatment.

● Instruct patient to avoid crowds and persons with known infections. Instruct patient to use soft toothbrush and electric razor. Caution patient to avoid alcoholic beverages or take products containing aspirin or other NSAIDs.

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- Instruct patient to notify nurse of pain at injection site immediately.
- Instruct patient to notify health care professional if vomiting, fainting, or dizziness occurs.
- Discuss with patient possibility of hair loss. Explore methods of coping.
- Advise patient that this medication may have teratogenic effects. Contraception should be used during therapy.
- Instruct patient not to receive any vaccinations without consulting health care professional.
- Emphasize the need for periodic lab tests to monitor for side effects.

**Evaluation/Desired Outcomes**
- Decrease in size and spread of malignancy.

**Why was this drug prescribed for your patient?**