**DACTINomycin** (dak-ti-noe-my-e-sin)

**Classification**
Antineoplastics

**Pharmacologic**
Antitumor antibiotics

**Pregnancy Category**
C

**Indications**
Alone or with other treatment modalities in the management of: Wilms’ tumor, Rhabdomyosarcoma, Ewing’s sarcoma, Trophoblastic neoplasms, Testicular carcinoma, Metastatic nonseminomatous testicular cancer, Gestational trophoblastic neoplasms as a component of regional perfusion for treatment of locally recurrent solid malignancies.

**Action**
Inhibits RNA synthesis by forming a complex with DNA (cell-cycle phase–nonspecific). Therapeutic Effects: Death of rapidly replicating cells, particularly malignant ones. Also has immunosuppressive properties.

**Pharmacokinetics**

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

**Distribution:** Widely distributed, with extensive tissue binding; does not cross the blood-brain barrier. Crosses the placenta.

**Metabolism and Excretion:** Excreted in bile (50%) and feces (14%) as unchanged drug; small amounts excreted unchanged by the kidneys (10%).

**Half-life:** 36 hr.

**TIME/ACTION PROFILE (effects on blood counts)**

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tbody>
<tr>
<td>IV</td>
<td>7 days</td>
<td>14–21 days</td>
<td>21–28 days</td>
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**Contraindications/Precautions**

**Contraindicated in:** Hypersensitivity, OI, Lactation: Pregnancy or lactation. Patients with concurrent or recent chemotherapy or radiation treatment, *Ped:* Children <6 mos.

**Use Cautiously in:** Active infections; Immunosuppressed patients; Concurrent radiation therapy; Hepatic dysfunction; Patients with childbearing potential.

**Adverse Reactions/Side Effects**

**CNS:** Lethargy, Malaise.

**GI:** Anorexia, Nausea, Vomiting, abdominal pain, diarrhea, dysphagia, esophagitis, hepatotoxicity, ulceration.

**Derm:** Acne, Alopecia, Erythema (especially of previously irradiated skin), Hyperpigmentation (especially of previously irradiated skin), skin eruptions, photosensitivity, rash.

**EENT:** Pharyngitis.

**Endo:** Hypocalcemia, Gonadal suppression.

**Hemat:** Anemia, Leukopenia, Thrombocytopenia, Febrile neutropenia, Neutropenia.

**Local:** Phlebitis at IV site.

**MS:** Myalgia.

**Resp:** Pneumonitis.

**Misc:** Fever.

**Interactions**

**Drug-Drug:** Bone marrow depression with other antineoplastics or radiation therapy. May impair antibody response to live-virus vaccines and risk of adverse reactions (avoid concurrent use).

**Route/Dosage**

**Wilms’ Tumor, Rhabdomyosarcoma, Ewing’s Sarcoma**

**IV (Adults and Children >6 mos):** 15 mcg/kg/day for 5 days administered in various combinations and schedules.

**Metastatic Nonseminomatous Testicular Cancer**

**IV (Adults):** 1000 mcg/m² as single dose in combination with other agents.

**Gestational Trophoblastic Neoplasms**

**IV (Adults):** 12 mcg/kg/day for 5 days as a single agent or 500 mcg/day for 2 days in combination with other agents.

**Regional Perfusion in Locally Recurrent Solid Malignancies**

**Regional perfusion (adults):** Lower extremity/pelvis—50 mcg/kg; upper extremity—35 mcg/kg.

**NURSING IMPLICATIONS**

**Assessment**

- Monitor vital signs before and frequently during therapy.
- Monitor for bone marrow depression, doses for bleeding (bleeding gums, bruising, petechiae, guaiac stools, urine, and emesis) and avoid IM injections and rectal examination.
- Avoid concurrent use with other agents that impair bone marrow or hepatotoxicity.

**Patient/Family Teaching**

- Instruct patient to take drug as directed; take missed doses as soon as remembered (within 4 hr). If more than 4 hr delay, omit dose.

**Evaluation**

- Response to therapy is based on regression of primary tumor mass and metastases.
Avoid contact with skin; highly toxic; both powder and solution must be handled

Avoid confusion with daptomycin.

High Alert:

Implementation

Impaired oral mucous membrane (Side Effects)

Risk for infection (Adverse Reactions)

Potential Nursing Diagnoses

Monitor renal function (BUN and serum creatinine).

Monitor for hepatotoxicity (Lab Test Considerations: AST, ALT, LDH, and serum bilirubin).

Side effects other than nausea and vomiting may be delayed in onset (2–4 days after course of therapy). The nadirs of thrombocytopenia and leukopenia occur in 3 wk. Recovery occurs 3 wk later.

Laboratory values should be obtained before and periodically during therapy and administration of diet as tolerated may help maintain fluid and electrolyte balance and nutritional status.

Potential Nursing Diagnoses

Risk for infection (Side Effects)

Impaired oral mucous membrane (Nasal Effects)

Implementation

High Alert: Fatalities have occurred with chemotherapeutic agents. Before administering, clearly label all medications, double check single, double, and course of therapy; these limits have saved practitioners from inadvertently double-checking orders, calculations and infusion pump settings.

Do not confuse dactinomycin with daptomycin.

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mesna, metaraminol, methohexital, methotrexate, methyldopate, methylprednisolone, methylprednisolone, metoclopramide, metoprolol, metronidazole, midazolam, milrinone, milrinone, minocycline, moxifloxacin, morphine, nitroglycerin, nitroprusside, norepinephrine, octreotide, ondansetron, oxaliplatin, paclitaxel, palonosetron, pancuronium, pancuronium, pentamidine, pentazocine, pentobarbital, phenothiazine, phenprocoumon, phenylbutazone, phenylephrine, piperacillin/tazobactam, potassium acetate, potassium chloride, potassium phosphates, procainamide, prochlorperazine, promethazine, propranolol, quinupristin/dalfopristin, ranitidine, ranolazine, ranolazine, rapamycin, rasburicase, racemic, remifentanil, rituximab, sargramostim, sodium acetate, sodium bicarbonate, sodium phosphates, sucralfate, sulfinpyrazone, tepoxalin, theophylline, ticarcillin, tobramycin, tolazoline, topotecan, tranexamic, trimethoprim/sulfamethoxazole, turoctocog, verapamil, vincristine, vincristine, vinorelbine, voriconazole, zidovudine, zoledronic acid.

● Y-Site Incompatibility: dantrolene, diazepam, digoxin, domperidone, panipitant, pemetrexed, pentamidine, pentazocine, pentobarbital, phenobarbital, phentolamine, phenylephrine, piperacillin/tazobactam, potassium acetate, potassium chloride, potassium phosphates, procainamide, prochlorperazine, promethazine, propranolol, quinupristin/dalfopristin, ranitidine, ranolazine, ranolazine, rapamycin, rasburicase, racemic, remifentanil, rituximab, sargramostim, sodium acetate, sodium bicarbonate, sodium phosphates, sucralfate, sulfinpyrazone, tepoxalin, theophylline, ticarcillin, tobramycin, tolazoline, topotecan, tranexamic, trimethoprim/sulfamethoxazole, turoctocog, verapamil, vincristine, vincristine, vinorelbine, voriconazole, zidovudine, zoledronic acid.

Patient/Family Teaching

● Instruct patient to report health care professional if fever, chills, sore throat; signs of infection; bleeding; bruising; petechiae; or blood in urine, stool, or emesis occurs. Caution patient to avoid persons with known infections. History patients are at risk for infections. Caution patient to drink alcoholic beverages or take products containing aspirin or NSAIDs; may increase GI irritation.

● Instruct patient to inspect oral mucosa for erythema and ulceration. If ulceration occurs, advise patient to use sponge brush and rinse mouth with water after eating and drinking. Some patients may require treatment with topical agent.

● Instruct patient to avoid contact with eyes or mucous membranes. Some patients may experience irritation or sensitivity. For patients, eyes or mucous membranes may require treatment with topical agent.

● Emphasize importance of periodic lab tests to monitor for side effects.

Evaluation/Desired Outcomes

● Decrease in size or spread of malignancy.

Why was this drug prescribed for your patient?

● Instruct patient not to receive any vaccinations without advice of health care professional.

● Inform patient that this medication may cause reversible gonadal suppression. Advise patient that this medication may have teratogenic effects. A nonhormonal method of contraception should be used during therapy and for at least 4 mos after therapy is concluded.

● Emphasize the need for periodic lab tests to monitor for side effects.