bleomycin (blee-oh-mye-sin)

Blenoxane

**Classification**

Therapeutic: antineoplastics
Pharmacologic: antitumor antibiotics

**Pregnancy Category D**

**Indications**

Treatment of: Lymphomas, Squamous cell carcinoma, Testicular embryonal cell carcinoma, Choriocarcinoma, Teratocarcinoma. Intrapleural administration to prevent the reaccumulation of malignant effusions.

**Action**

Inhibits DNA and RNA synthesis.

**Therapeutic Effects:** Death of rapidly replicating cells, particularly malignant ones.

**Pharmacokinetics**

**Absorption:** Well absorbed from IM and subcut sites. Absorption follows intrapleural and intraperitoneal administration.

**Distribution:** Widely distributed, concentrates in skin, lungs, peritoneum, kidneys, and lymphatics.

**Metabolism and Excretion:** 60–70% excreted unchanged by the kidneys.

**Half-life:** 2 hr (q in renal impairment).

**TIME/ACTION PROFILE (tumor response)**

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV, IM, Subcut</td>
<td>2–3 wk</td>
<td>unknown</td>
<td>unknown</td>
</tr>
</tbody>
</table>

**Contraindications/Precautions**

- **Contraindicated in:** Hypersensitivity; OB, Lactation: Potential for fetal, infant harm.

- **Use Cautiously in:** Renal impairment (dose p required if CCr ≥ 35 mL/min); Pulmonary impairment; Nonmalignant chronic debilitating illness; Patients with childbearing potential; Geri: q risk of pulmonary toxicity and reduction in renal function.

**Adverse Reactions/Side Effects**

- **CNS:** aggressive behavior, disorientation, weakness.
- **Resp:** pneumonitis, pulmonary fibrosis.
- **CV:** hypotension, peripheral vasoconstriction.
- **GI:** anorexia, nausea, vomiting.
- **Derm:** alopecia, dermatitis, rashes, urticaria, vesiculation.
- **Hemat:** anemia, leukopenia, thrombocytopenia.
- **Local:** pain at tumor site, phlebitis at IV site. **Misc:** anaphylactic reaction, flushing.

**Interactions**

**Drug-Drug:** Hematologic toxicity ↓ with concurrent use of radiation therapy and other antineoplastics. Concurrent use with vincristine ↓ dilution of bleomycin and ↑ toxicity. ↑ risk of pulmonary toxicity with other antineoplastics or thoracic radiation therapy. General anesthesia ↓ the risk of pulmonary toxicity. ↑ risk of Raynaud’s phenomenon when used with vincristine.

**Route/Dosage**

Lymphoma patients should receive initial test doses of 1 unit or less for the first 2 doses.

**IV, IM, Subcut (Adults and Children):** 0.25–0.5 unit/kg (10–20 units/m²) weekly or twice weekly initially. If favorable response, lower maintenance doses given (1 unit/day or 5 units/wk IM or IV). May also be given as continuous IV infusion at 0.25 unit/hr or 15 units/hr/day for 6–5 days.

Intrapleural (Adults): 15–20 units instilled for 4 hr, then removed.

**NURSING IMPLICATIONS**

**Assessment**

- Monitor vital signs before and frequently during therapy.
- Assess for fever and chills. May occur 3–6 hr after administration and last 4–12 hr.
- Monitor for anaphylactic (fever, chills, hypotension, wheezing) and idiosyncratic (confusion, hypotension, fever, chills, wheezing) reactions. Keep resuscitation equipment and medications on hand. Lymphoma patients are at particular risk for idiosyncratic reactions that may occur immediately or several hours after therapy; usually after the first or second dose.

**Nursing Considerations**

- Assess respiratory status for dyspnea and rales/crackles. Monitor chest x-ray before and periodically during therapy. Pulmonary toxicity occurs primarily in geriatric patients (age ≥ 70 or older) who have received 450 mg/m².
bleomycin

- Assess nausea, vomiting, and appetite. May occur 4–10 wk after therapy. Discontinue and do not resume bleomycin if pulmonary toxicity occurs.
- Monitor blood counts and periodic renal and hepatic function.

Potential Nursing Diagnoses
- Risk for injury (Side Effects)
- Disturbed body image (Side Effects)

Implementation
- High Alert: Fatalities have occurred with chemotherapeutic agents. Before administration, clarify all ambiguous orders; double-check single, daily, and course-of-therapy dose limits; have second practitioner independently double-check original order and dose calculations.
- Prepare solution in a biologic cabinet. Wear gloves, gown, and mask while handling medication. Discard equipment in specially designated containers.
- Lymphoma patients should receive a 1- or 2-unit test dose 2–4 hr before initiation of therapy. Monitor closely for anaphylactic reaction. May not detect reactors.
- Premedication with acetaminophen, corticosteroids, and diphenhydramine may reduce drug fever and risk of anaphylaxis.
- Reconstituted solution is stable for 24 hr at room temperature and for 14 days if refrigerated.
- IM, Subcut: Reconstitute vial with 1–5 mL of sterile water for injection, 0.9% NaCl, or bacteriostatic water for injection. Do not reconstitute with diluents containing benzyl alcohol when used for neonates.

IV Administration
- pH: 4–6.5
- Concentration Infusion: Prepare IV doses by diluting 15-unit vial with at least 5 ml of 0.9% NaCl. Further dilute dose as 50 to 1000 ml of IV solution or 0.9% NaCl. Rate: Administer slowly over 10 min.

V-Site Compatibility: allopurinol, amifostine, amrubicin, amphotericin B, antracyclines, atorvastatin, atracurium, bacitracin, benzylpenicillin, bleomycin, calcium chloride, calcium gluconate, carboplatin, carmustine, cefepime, chlorpromazine, ciclosporine, cytarabine, dacarbazine, daunomycin, daunorubicin, dexamethasone, dexrazoxane, docetaxel, doxorubicin, doxorubicin liposome, drotrecogin alfa (activated), epidophyllotoxin, etoposide, famotidine, fludarabine, fluorouracil, fosphenytoin, furosemide, gemcitabine, glycopyrrolate, granisetron, heparin, hetastarch, hydralazine, hydrocortisone, idarubicin, ifosfamide, insulin, isoproterenol, ketorolac, labetalol, leucovorin calcium, levofloxacin, lidocaine, magnesium sulfate, mannitol, mechlorethamine, melphalan, meperidine, mesna, metaraminol, methotrexate, metoclopramide, metoprolol, melphalan, mitoxantrone, mitoxantrone, nitroglycerin, norepinephrine, octreotide, ondansetron, oxaliplatin, paclitaxel, palonosetron, pancuronium, pantoprazole, pemetrexed, phentolamine, phenylephrine, piperacillin/tazobactam, potassium acetate, potassium chloride, potassium phosphates, procainamide, procaine, propofol, quinupristin/dalfopristin, rituximab, sargramostim, sodium bicarbonate, tirofiban, trastuzumab, vinblastine, vincristine, vinorelbine, voriconazole.

Y-Site Incompatibility: amphotericin B liposome, dantrolene, phenytoin, tigecycline.

Intrapleural: Dissolve 60 units in 50–100 mL of 0.9% NaCl.

May be administered through thoracotomy tube. Position patient as directed.

Patient/Family Teaching
- Instruct patient to notify health care professional if fever, chills, wheezing, faintness, diaphoresis, shortness of breath, prolonged nausea and vomiting, or mouth sores occur.
- Encourage patient not to smoke because this may worsen pulmonary toxicity.
- Explain to the patient that skin toxicity may manifest as skin sensitivity, hyperpigmentation, especially at skin folds and points of skin irritation, and skin rash and thickening.
- 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. (Physical anesthetics may be required if pain interferes with eating.)
bleomycin

- Discuss with patient the possibility of hair loss. Explore coping strategies.
- Advise patient of the need for contraception during therapy.
- Instruct patient not to receive any vaccinations without advice of health care professional.
- Emphasize need for periodic lab tests to monitor for side effects.

Evaluation/Desired Outcomes
- Decrease in tumor size without evidence of hypersensitivity or pulmonary toxicity.

Why was this drug prescribed for your patient?