mitoXANtrone (mye-to-zan-trone)

**Name**: mitoXANtrone

**Synonyms**: mitoXANtrone, Novantrone

**Classification**: Therapeutic: antineoplastics, immune modifiers  Pharmacologic: antitumor antibiotics

**Pregnancy Category**: D

## Indications

Acute myelogenous leukemia (AML) in adults (with other antineoplastics). Initial chemotherapy for patients with pain associated with advanced hormone-refractory prostate cancer. Secondary (chronic) progressive, progressive relapsing, or worsening relapsing-remitting multiple sclerosis (MS).

**Unlabeled Use**: Breast cancer, liver cancer, and non-Hodgkin’s lymphoma.

## Action

Inhibits DNA synthesis (cell-cycle phase–nonspecific). Therapeutic Effects: Death of rapidly replicating cells, particularly malignant ones. Decreased pain in patients with advanced prostate cancer. Decreased disability and slowed progression of MS.

## Pharmacokinetics

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

**Distribution**: Widely distributed, limited penetration of CSF.

**Metabolism and Excretion**: Mostly eliminated by hepatobiliary clearance; 10% excreted unchanged by the kidneys.

**Half-life**: 5.8 days.

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

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<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tr>
<td>IV</td>
<td>unknown</td>
<td>10 days</td>
<td>21 days</td>
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## Contraindications/Precautions

- Avoid use in patients with a history of hypersensitivity to mitoXANtrone, anthracyclines, or anthracycline-containing products.

## Adverse Reactions/Side Effects

- **CNS**: Seizures, headache.
- **EENT**: Blue-green sclera, conjunctivitis.
- **Resp**: Cough, dyspnea.
- **CV**: Cardiotoxicity, arrhythmias, ECG changes.
- **GI**: Abdominal pain, diarrhea, hepatic toxicity, nausea, stomatitis, vomiting.
- **GU**: Blue-green urine, gonadal suppression, renal failure.
- **Derm**: Alopecia, rashes.
- **Hemat**: Anemia, leukopenia, secondary leukemia, thrombocytopenia.
- **Metab**: Hyperuricemia.

## Interactions

- **Drug-Drug**: Bone marrow depression with other antineoplastics or radiation therapy. Risk of cardiotoxicity by previous anthracycline antineoplastics (daunorubicin, doxorubicin, idarubicin) or mediastinal radiation. May potentiate response to live-virus vaccines and risk of adverse reactions.

## Route/Dosage

### Acute Nonlymphocytic Leukemia

**IV (Adults)**: Induction—12 mg/m²/day for 3 days (usually given with cytosine arabinoside 100 mg/m²/day for 7 days); if incomplete remission occurs, a 2nd induction may be given. Consolidation—12 mg/m²/day for 2 days (usually given with cytosine arabinoside 100 mg/m²/day for 5 days); given 6 wk after induction with another course to a maximum of 4 courses.

### Advanced Prostate Cancer

**IV (Adults)**: 12–14 mg/m² single dose as a short infusion (with corticosteroids).  

### Multiple Sclerosis

**IV (Adults)**: 12 mg/m² q3mo.

## Nursing Implications

### Assessment

- Monitor for hypersensitivity reaction (cough, urticaria, bronchospasm, tachycardia, hypotension). If these occur, stop infusion and notify physician. Keep epinephrine, an antihistamine, and resuscitation equipment close by in the event of an anaphylactic reaction.

| D | Contraindicated in: Hypersensitivity, OB, Lactation: Pregnancy or lactation. Use Cautiously: Presence or history of cardiovascular disease, bone marrow failure, OR: Patients with cholinergic potential. Active infection, bone marrow reserve. Previous mediastinal radiation or use of anticholinergics. S s: Safety not established. Ger: May have sensitivity to drug effects.
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<td>1</td>
<td>Canadian drug name.</td>
<td>Genetic Implication. CAPI TALS indicate life-threatening, underline indicate most frequent. Strikethrough Discontinued.</td>
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Monitor for bone marrow depression. Assess for bleeding (slurred speech, bruising, petechiae, gum bleeding, urine, and stools) and avoid IM injections and tubing or venous cannulation sites for 10 min. Assess for signs of infection during neutropenia. Anemia may occur. Monitor for increased fatigue, drowsiness, and orthostatic hypotension.

Monitor intake and output, appetite, and nutritional intake. Assess patient for nausea and vomiting. Antibiotics may be administered prophylactically. Adjust as tolerated to help maintain fluid and electrolyte balance and nutritional status.

Monitor chest x-ray, ECG, echocardiography or MUGA, and radionuclide angiography to determine ejection fraction prior to and periodically during therapy. Multiple sclerosis patients with baseline left ventricular ejection fraction (LVEF) <40% should not receive mitoxantrone. May cause cardiotoxicity, especially in patients who have received doxorubicin or bleomycin. Assess for rales/crackles, dyspnea, edema, irregular ventricular rate, ECG changes, arthralgias, and chest pain. Monitor LVEF with echocardiogram or MUGA if signs of HF occur prior to each dose, and weekly after stopping therapy in patients with multiple sclerosis. Potentially fatal HF may occur during or for months or yr after therapy. Risk is greater in patients receiving a cumulative dose >140 mg/m².

Monitor for symptoms of gout (urate acid levels and joint pain and swelling). Encourage patient to drink at least 2 L of fluid per day. Allopurinol may be given to decrease serum uric acid levels. Monitor urine output hourly while handling medication. Discard equipment in designated containers. Avoid contact with skin. Use latex-free tubing to prevent accidental leakage.

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- Cefazolin, cefepime, cefoperazone, cefotaxime, cefoxitin, ceftazidime, ceftriaxone, cefuroxime, clindamycin, dantrolene, dexamethasone, diazepam, digoxin, doxorubicin liposome, ertapenem, foscarinet, fosphenytoin, furosemide, heparin, idarubicin, methylprednisolone, nafcillin, nitroprusside, paclitaxel, pantoprazole, pemetrexed, phenytoin, piperacillin/tazobactam, potassium phosphates, propofol, sodium phosphates, ticarcillin/clavulanate, voriconazole.

- Advise patient to read the Patient Package Insert before starting therapy and before each dose in case of changes.

- Instruct patient to notify health care professional promptly if fever; chills; cough; hoarseness; signs of infection; lower back or side pain; painful or difficult urination; bleeding gums; bruising; blood in stools, urine, or emesis; increased fatigue; dyspnea; or orthostatic hypotension occurs. Caution patient to avoid crowds and persons with known infections. Instruct patient to use soft toothbrush and electric razor and to avoid falls. Caution patient not to drink alcoholic beverages or take medication containing aspirin or NSAIDS, may precipitate gastric bleeding.

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- Advise patient to notify health care professional if abdominal pain, yellow skin, cough, diarrhea, or decreased urine output occurs.

- Advise patient that medication may cause the skin to turn blue-green.

- Advise patient to inspect oral mucosa for redness and ulceration. If mouth sores occur, advise patient to use sponge brush and rinse mouth with water after eating and drinking. Topical agents may be used if pain interferes with eating. Steinman's pemphigus may require treatment with topical anesthetics.

- Discuss with patient the possibility of hair loss, Explore coping strategies.

- Advise patient not to receive any vaccinations without advice of health care professional.

- Advise patient that although mitoxantrone may cause infertility, contraception during therapy is unnecessary because of possible teratogenic effects.

- Emphasize need for periodic lab tests to monitor for side effects.

Patient/Family Teaching

- Advise patient to notify health care professional promptly if fever, chills, cough, hoarseness, sore throat, signs of infection, lower back or side pain, painful or difficult urination, bleeding gums, bruising, blood in stools, urine, or emesis, increased fatigue, dyspnea, or orthostatic hypotension occurs. Caution patient to avoid crowds and persons with known infections. Instruct patient to use soft toothbrush and electric razor and to avoid falls. Caution patient not to drink alcoholic beverages or take medication containing aspirin or NSAIDS, may precipitate gastric bleeding.

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Evaluation/Desired Outcomes

- Decrease in the production and spread of leukemia cells.

- Decreased pain in patients with prostate cancer.

- Decrease in the frequency of relapse (neurologic dysfunction) in patients with relapsing-remitting multiple sclerosis.

Why was this drug prescribed for your patient?