**Hydroxyurea** (hye-drox-ee-yoor-ee-a)

*Devis, Hydrea*

**Classification**
Therapeutic: antineoplastics
Pharmacologic: antimitoblates

**Pregnancy Category D**

**Indications**
Head and neck carcinoma. Ovarian carcinoma. Resistant chronic myelogenous leukemia. Melanoma. Reduction of painful crises in adult patients with a history of recurrent moderate to severe crises (at least 3 in the preceding yr).

**Action**
Interferes with DNA synthesis (cell-cycle S-phase–specific). May alter characteristics of RBCs.

**Therapeutic Effects:**
Death of rapidly replicating cells, particularly malignant ones. Decreased frequency of painful crises and decreased need for transfusions in sickle cell anemia.

**Pharmacokinetics**
Absorption: Well absorbed following oral administration.

Distribution: Crosses the blood-brain barrier; concentrates in RBCs and leukocytes.

Metabolism and Excretion: 50% excreted unchanged by the kidneys; 50% metabolized by the liver and eliminated as respiratory CO.

**Half-life:** 3–4 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>PO</td>
<td>7 days</td>
<td>10 days</td>
<td>21 days</td>
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**Contraindications/Precautions**

Contraindicated in: Hypersensitivity; OB, Lactation: Pregnancy or lactation; Some products contain tartrazine (FDC yellow dye #5) and should be avoided in patients with known hypersensitivity.

Use Cautiously in: Patients with childbearing potential; Renal impairment (close monitoring of hematologic parameters recommended, dosage may be necessary); Hepatic impairment (close monitoring of hematologic and hepatic parameters recommended); Myelodysplastic disorders (may risk of osteolytic alterations and gangrene). Acute infections, immune marrow suppression (other chronic debilitating disease, HIV patients receiving didanosine and stavudine [1 risk of pancreatitis and hepatotoxicity]); Genetic: May be more sensitive to effects, lower doses may be required; Obese patients or patients with edema (dose should be determined using ideal body weight).

**Adverse Reactions/Side Effects**

CNS: drowsiness (large doses).

GI: anorexia, diarrhea, nausea, vomiting, constipation, hepatitis, stomatitis.

GU: dysuria, infertility, renal tubular dysfunction.

Derm: alopecia, exacerbation of post-radiation erythema.

Metab: hyperuricemia.

Interactions
Drug-Drug: Additive bone marrow depression with agents that depress bone marrow, including radiation therapy. May risk of adverse reactions to live-virus vaccines; may risk of pancreatitis and hepatotoxicity when used with didanosine and stavudine; avoid concurrent use.

**Route/Dosage**

**Head and Neck Cancer, Ovarian Cancer, Malignant Melanoma**

PO (Adults): 60–80 mg/kg (2–3 g/m²) as a single daily dose or 20–30 mg/kg/day as a single dose. Therapy should be initiated 7 days prior to radiation and continued.

**Resistant Chronic Myelogenous Leukemia**

PO (Adults): 20–30 mg/kg/day in 1–2 divided doses.

**Sickle Cell Anemia**

PO (Adults and Children): 15 mg/kg/day as a single dose, may be increased in those patients with lower hematocrits.

**NURSING IMPLICATIONS**

**Assessment**

- Assess for signs of infection (fever, sore throat, cough, unexplained fatigue, bruising) and pain in lower back or legs, difficulty in walking, or numbness. If those symptoms occur, notify health care professional immediately.

- Monitor CBC, platelet counts, and WBC for hematologic toxicity.

**Nursing Considerations**

- Cardiac patients: Avoid large doses and close monitoring of hematologic parameters recommended, dosage may be necessary.

- Obese patients: Dose should be determined using ideal body weight.

- HIV patients: Avoid concurrent use with didanosine and stavudine.

- Patients receiving didanosine and stavudine: Risk of pancreatitis and hepatotoxicity.

- Renal impairment: Close monitoring of hematologic parameters recommended, dosage may be necessary.

- Hepatic impairment: Close monitoring of hematologic and hepatic parameters recommended.

- Myelodysplastic disorders: Risk of osteolytic alterations and gangrene.

- Immune marrow suppression: Other chronic debilitating disease, HIV patients receiving didanosine and stavudine.

- Genetic: May be more sensitive to effects, lower doses may be required.

- Obese patients or patients with edema: Dose should be determined using ideal body weight.

- OB, Lactation: Avoid concurrent use with didanosine and stavudine.

- Hypersensitivity: Avoid concurrent use with didanosine and stavudine.

- OB, Lactation: Avoid concurrent use with didanosine and stavudine.
Implementation

PO: Wear disposable gloves when handling capsules. Wash hands before and after handling capsules. Do not open capsules, exposure to powder may cause systemic toxicity. If powder from capsule is spilled, wipe up immediately with damp disposable towel and discard in a closed container, such as a plastic bag.

Patient/Family Teaching

Instruct patient to take medication as directed, even if nausea, vomiting, or diarrhea is a problem. Counsel health care professional if vomiting occurs shortly after dose is taken. Take missed doses as soon as remembered unless less than next dose. Do not take double doses. Counsel health care professional if more than one dose is missed.

Instruct patient to notify health care professional if fever, chills, sore throat, signs of infection; loss of appetite, nausea, vomiting, diarrhea, bloating, pain, bruising, purpura, or blood in stool, urine, or emesis occurs. Caution patient to avoid crowds and people with known infections. Instruct patient to use due to increased risk of developing cancer. Instruct patient to inspect oral mucosa for erythema and ulceration. If ulceration occurs, advise patient to use orange broth and rinse mouth with water after eating and drinking. Counsel health care professional if mouth pain interferes with eating. Stomatitis pain may require treatment with special analgesics.

Discuss possible of development with patient receiving large doses. Advise patient to avoid driving or other activities until response to drug is known.

Advise patient to notify health care professional of all Rx and OTC medications, vitamins, herbal products being taken and to consult with health care professional before taking other medications.

Women receiving contraception during therapy. Women need to use contraception even if amenorrhea occurs. May cause infertility. Advise female patient to notify health care professional if pregnant or if breast feeding.

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

Emphasize need for lab tests and follow-up visits to monitor progress and detect side effects.

Leukemia: The orange fluid intake of 2000–3000 mL/day. Allopurinol and alkalinization of the urine may be used to help prevent uric acid stones formation.

CONTINUED
hydroxyurea

Evaluation/Desired Outcomes

- Decrease in size and spread of tumors.
- Improved hematologic values in leukemia. Therapy is held if leukocytes are less than 2500/mm³ or platelets less than 100,000/mm³ and resumed when these values begin to return to normal limits, usually within 3 days.
- Reduction in painful crises of sickle cell anemia.

Why was this drug prescribed for your patient?