Fluorouracil (fluor-oh-yoor-a-sill)

Classifications
Therapeutic: antineoplastics
Pharmacologic: antimetabolites

Pregnancy Category D

Indications
IV: Used alone and in combination with other modalities (surgery, radiation therapy, other antineoplastics) in the treatment of: Colon cancer, Breast cancer, Rectal cancer, Gastric cancer, Pancreatic carcinoma. Topical: Management of multiple actinic (solar) keratoses and superficial basal cell carcinoma.

Action
Inhibits DNA and RNA synthesis by preventing thymidine production (cell-cycle S-phase-specific). Therapeutic Effects: Death of rapidly replicating cells, particularly malignant ones.

Pharmacokinetics
Absorption: Minimal absorption (5–10%) after topical application. Distribution: Widely distributed; concentrates and persists in tumors. Metabolism and Excretion: Metabolized by dihydropyrimidine dehydrogenase to a less toxic compound; inactive metabolites are excreted primarily in urine. Half-life: 20 hr.

TIME/ACTION PROFILE (IV effects on blood counts, Top dermatologic effects)

<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>1–9 days</td>
<td>9–21 days (nadir)</td>
<td>30 days</td>
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<tr>
<td>Top</td>
<td>2–3 days</td>
<td>2–6 wk</td>
<td>1–2 mo</td>
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Contraindications/Precautions
Contraindicated in: Hypersensitivity; Dihydropyrimidine dehydrogenase deficiency (patients at risk of 5-FU toxicity); OB, Lactation: Pregnancy or lactation.

Use Cautiously in: Infections; Depressed bone marrow reserve; Other chronic debilitating illnesses; Obese patients, patients with edema or ascites (dose should be based on ideal body weight).

Adverse Reactions/Side Effects

Interactions
Drug-Drug: Combination chemotherapy with irinotecan may produce unacceptable toxicity (dehydration, neutropenia, sepsis). Additive bone marrow depression with other bone marrow depressants, including other antineoplastics and radiation therapy. May ↑ antibody response to live-virus vaccines and ↑ risk of adverse reactions.

Route/Dosage

Advanced Colorectal Cancer
IV (Adults): 370 mg/m² preceded by leucovorin or 425 mg/m² preceded by leucovorin daily for 5 days. May be repeated q 4–5 wk.

Other Tumors
IV (Adults): Initial dose—12 mg/kg/day for 4 doses, then 1 day of rest, then 6 mg/kg every other day for 4–5 doses or 7–12 mg/kg/day for 4 days followed by 3-day rest, then 7–10 mg/kg 1–5 days or 5–6 days or 3–5 days. Maintenance—7–12 mg/kg q 10 days or 300–500 mg/m²/day for 4–5 days, repeated monthly (no single daily dose should exceed 500 mg). Poor-Risk Patients: 5–6 mg/kg/day on days 1–3, 3 mg/kg/day on days 5, 7, 8 (not to exceed 400 mg/dose). Doses of 370–425 mg/m²/day for 5 days have been used in combination with leucovorin.

Actinic (Solar) Keratoses
Topical (Adults): Genes—Apply 0.5% cream to lesions once daily for up to 6 wk; Efudex—Apply 2% or 5% solution or cream to lesions twice daily for 2–4 wk; Fluoroplex—Apply 1% cream to lesions twice daily for 2–4 wk.

Superficial Basal Cell Carcinomas
Topical (Adults): Efudex—Apply 3% solution or cream to lesions twice daily for 3–6 wk (up to 12 wk).
Potential Nursing Diagnoses

Risk for infection (Side Effects)
Indigestion: less than body requirements (Side Effects)

Implementation

• High Alert: Volumes have occurred with incorrect administration of chemotherapy agents. Before administering, clarify all ambiguous orders; double-check single, daily, and course-of-therapy dose limits; have second practitioner independently double-check original order, calculations and infusion pump settings. The number 5 in 5-fluorouracil represents the number of the drug name and does not refer to the dose.

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

IV Administration

pH: 8.6–9.2

Concentration: 100 mg/mL. Rate: 100 mg/mL, or 1000 mg/mL, depending on infusion time.

fluorouracil

CONTINUED

Caution: use with extreme caution in patients with severe hepatic, cardiac, or renal dysfunction; elderly patients; or children. Do not use in patients with severe liver impairment. Use with caution in patients with impaired renal function.

Use: Chemotherapy

Adverse Reactions

Hematologic: neutropenia, anemia, leukopenia, thrombocytopenia
Nonhematologic: fever, headache, nausea, vomiting, diarrhea, stomatitis, leukopenia, anemia, thrombocytopenia

Drug Interactions

Various interactions with other drugs may occur. Use with caution and monitor closely.

Fluorouracil is a cytotoxic agent and should be prescribed with caution. It is not recommended for long-term use unless there is a clear indication of benefit.

Instruct patient in correct application of solution or cream. Emphasize importance of avoiding the eyes; caution should also be used when applying medication near mouth and nose. If patient uses clean finger to self-administer, emphasize importance of washing hands thoroughly after application. Explain that erythema, scaling, and blistering with pruritus and burning sensation are expected. Advise patient to avoid sunlight or ultraviolet light (tanning booths) as much as possible; sun exposure may increase side effects. Therapy is discontinued when erosion, ulceration, and necrosis occur in 2–6 wk (10–12 wk for basal cell carcinomas). Skin heals 4–8 wk later.

Evaluation/Desired Outcomes

Tumor regression.
Removal of solar keratoses or superficial basal cell skin cancers.

Why was this drug prescribed for your patient?