rifampin (rif'am-pin)

Therapeutic Class: Antituberculars
Pharmacologic: Rifamycin

Pregnancy Category: C

**Indications**

- Active tuberculosis (with other agents)
- Elimination of meningococcal carriers

**Contraindications/Precautions**

- Use Cautiously in:
  - History of liver disease
  - Concurrent use of other hepatotoxic agents
  - Pregnancy or lactation

**Drug-Drug Interactions**

- Risk of hepatotoxicity with ritonavir-boosted saquinavir; concurrent use contraindicated.
- Significant; blood levels of atazanavir, darunavir, tipranavir, or ritonavir-boosted saquinavir.
- Rifampin stimulates liver metabolism and increases blood levels of atazanavir, fosamprenavir, saquinavir, tipranavir, and ritonavir-boosted saquinavir.
- Rifampin stimulates metabolism and increases blood levels of nevirapine.
- Rifampin increases risk of hepatotoxicity with other hepatotoxic agents; including alcohol, ketoconazole, isoniazid, pyrazinamide (concurrent use with pyrazinamide may result in potentially fatal hepatotoxicity and should be avoided). Significantly, blood levels of delavirdine, indinavir, and saquinavir increase when taken with rifampin.
- Rifampin increases risk of hepatotoxicity with ritonavir-boosted saquinavir, fosamprenavir, and saquinavir.

**Adverse Reactions/Side Effects**

- CNS:
  - Headache, confusion, dizziness, nervousness, paresthesias

- Derm:
  - Rash, pruritus

- EENT:
  - Conjunctivitis

- GI:
  - Nausea, vomiting, abdominal pain

- GU:
  - Hematuria

- Hemat:
  - Leukopenia, thrombocytopenia

- MS:
  - Headache

- Respiratory:
  - Bronchitis

- Other:
  - Uric acidosis, cholesterol elevation, discoloration of urine

**Dosage**

**Adults**

- PO, IV: Dosing may vary based on the specific condition being treated.

**Children and Infants**

- PO, IV:
  - Tuberculosis: 600 mg/day or 10 mg/kg/day (up to 600 mg/day) single dose; may also be given twice weekly.
  - Asymptomatic Carriers of Meningococcus: 600 mg/12 hr for 2 days.
  - Asymptomatic Carriers of Tuberculosis: 600 mg/12 hr for 2 days.

**Interactions**

- Rifampin may increase the risk of hepatotoxicity with other hepatotoxic agents; including alcohol, ketoconazole, isoniazid, pyrazinamide (concurrent use with pyrazinamide may result in potentially fatal hepatotoxicity and should be avoided). Significantly, blood levels of delavirdine, indinavir, and saquinavir increase when taken with rifampin.

**TIME/ACTION PROFILE (blood levels)**

- Peak:
  - Tuberculosis: 12–24 hr

**Pharmacokinetics**

- Metabolism and Excretion: Mostly metabolized by the liver; 60% eliminated in feces via biliary elimination.

- Distribution: Widely distributed; enters CSF; enters breast milk.

- Absorption: Well absorbed following oral administration.

**Therapeutic Effects:**

- Inhibits RNA synthesis by blocking RNA transcription in susceptible organisms.
**H. influenzae Prophylaxis**

PO (Adults): 600 mg/day for 4 days.  
PO (Children): 30 mg/kg/day for 4 days (max: 600 mg/dose).  
PO (Neonates): 10 mg/kg/day for 4 days.  

**Synergy for S. aureus infections**

PO (Adults): 900–6000 mg/24 h.  
PO (Children and Neonates): 5–20 mg/kg/day divided q 12 h (max: 600 mg/dose).  

**NURSING IMPLICATIONS**

**Assessment**  
- Perform microbiological studies and susceptibility tests prior to and periodically during therapy to detect possible resistance.  
- Assess lung sounds and character and amount of sputum periodically during therapy.  
- Lab Test Considerations: Evaluate renal function, CBC, and urinalysis periodically and during therapy.  
- May cause false-positive direct Coombs’ test results. May interfere with folic acid and vitamin B assays.  
- May interfere with methods for determining serum folate and vitamin B levels and with urine tests based on color reaction.  
- May delay hepatic uptake and excretion of sulfobromophthalein (SBP) during SBP uptake and excretion tests; perform test prior to daily dose of rifampin.

**Potential Nursing Diagnoses**

- Noncompliance (Patient/Family Teaching)
- Implementation
  - Do not confuse rifampin with rifabutin.  
- PO: Administer medication on an empty stomach at least 1 hr before or 2 hr after meals with a full glass (240 mL) of water. If GI irritation becomes a problem, may be administered with food. Antacids may also be taken 1 hr prior to administration. Capsules may be opened and contents mixed with applesauce or jelly for patients with difficult swallowing.  
- Pharmacist can compound a syrup for patients unable to swallow solids.

**IV Administration**

- pH: 7.0–8.0  
- Intermittent Infusion: Reconstitute each 600-mg vial with 10 mL of sterile water for injection for a concentration of 60 mg/mL. Diluent: Dilute further in 100 mL or 500 mL of D5W or 0.9% NaCl. Reconstituted vials are stable for 24 hr at room temperature. Infusion is stable at room temperature for 4 hr (in D5W) or 24 hr (in 0.9% NaCl). Concentrations: Not to exceed 6 mg/mL. Rate: Administer solutions at 180 mL over 30 min and 500 mL over 1 hr.  
- Y-Site Compatibility: amiodarone, bumetanide, midazolam, pantoprazole, succinylcholine.  
- Y-Site Incompatibility: diltiazem.

**Patient/Family Teaching**

- Advise patient to take medication once daily (unless biweekly regimens are used), as directed, and not to skip doses or double up on missed doses. Emphasize the importance of continuing therapy even after symptoms have subsided. Length of therapy for infections depends on regimens being used and underlying disease states. Patients on short-term prophylactic therapy should also be advised of the importance of compliance with therapy.  
- Advise patient to notify health care professional promptly if signs and symptoms of hepatic (yellow eyes and skin, nausea, vomiting, anorexia, unusual tiredness, weakness) or of thrombocytopenia (unusual bleeding or bruising) occur.  
- Caution patient to avoid the use of alcohol during this therapy, because this may increase the risks of hepatitis.  
- Instruct patient to report the occurrence of the above symptoms (fever, chills, myalgia, headache) promptly.  
- Elderly may require a lower initial dose; however, no other drug adjustments are necessary.  
- Caution patients to avoid driving or other activities requiring alertness until response to medication is known.

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- Inform patient that saliva, sputum, sweat, tears, urine, and feces may become red-orange to red-brown and that soft contact lenses may become permanently discolored.
- Advise patient that this medication has teratogenic properties and may decrease the effectiveness of oral contraceptives. Counsel patient to use a nonhormonal form of contraception throughout therapy.
- Emphasize the importance of regular follow-up exams to monitor progress and to check for side effects.

Evaluation/Desired Outcomes

- Decreased fever and night sweats.
- Diminished cough and sputum production.
- Negative sputum cultures.
- Increased appetite.
- Weight gain.
- Reduced fatigue.
- Sense of well-being in patients with tuberculosis.
- Prevention of meningococcal meningitis.
- Prevention of Haemophilus influenzae type B infection. Prophylactic course is usually short-term.

Why was this drug prescribed for your patient?