interferon beta-1a (in-ter-feer on-bay-ta won-aye)

**Avonex, Rebif**

**Classification**
- Therapeutic: anti-multiple sclerosis agents, immune modifiers
- Pharmacologic: interferons

**Pregnancy Category C**

**Indications**
- Relapsing forms of multiple sclerosis.

**Action**
- Antiviral and immunoregulatory properties produced by interacting with specific receptor sites on cell surfaces may explain beneficial effects. Produced by recombinant DNA technology.

**Therapeutic Effects:**
- Reduce incidence of relapse (neurologic dysfunction) and slow physical disability.

**Pharmacokinetics**
- **Absorption:** 50% absorbed following subcut administration.
- **Distribution:** Unknown.
- **Metabolism and Excretion:** Unknown.
- **Half-life:** 69 hr (subcutaneous), 10 hr (IM).

**TIME/ACTION PROFILE (serum concentrations)**

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<th>ROUTE</th>
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**Contraindications/Precautions**
- Contraindicated in: Hypersensitivity to natural or recombinant interferon beta or human albumin.
- Use Cautiously in: Patients with a history of suicide attempt or depression; history of seizures; cardiovascular disease; liver disease; history of alcohol abuse; patients with childbearing potential; OB, Lactation, Pedi: Safety not established.

**Adverse Reactions/Side Effects**
- **CNS:** Seizures, depression, dizziness, fatigue, headache, drowsiness, incoordination, rigors, suicidal ideation.
- **EENT:** Sinusitis, vision abnormalities.
- **Resp:** Upper respiratory tract infection.
- **CV:** Chest pain, heart failure.
- **GI:** Abdominal pain, nausea, autoimmune hepatitis, dry mouth, elevated liver function studies.
- **GU:** Dysuria, male Edema, retrovesical/bladder congestion.
- **MS:** Myalgia, arthralgia, back pain, muscle spasm.
- **NURSING IMPLICATIONS**

**Assessment**
- Assess frequency of exacerbations of symptoms of multiple sclerosis periodically during therapy.
- Monitor patient for signs of depression during therapy. If depression occurs, notify health care professional immediately.
- Lab Test Considerations: Monitor hemoglobin, WBC, platelets; monitor liver chemistries, history of alcohol abuse.
- **Interactions**
  - Drug-Drug: q Myelosuppression may occur with other myelosuppressives including antineoplastics. Concurrent use of hepatitis A agents may delay onset of hepatotoxicity. Concurrent use of anticonvulsants may delay onset of myelosuppression.
  - Drug-Natural Products: Avoid concommitant use with immunomodulating natural products such as astragalus, echinacea, and melatonin.

**Route/Dosage**
- **Avonex**
  - IM (Adults): 30 mcg once weekly.
- **Rebif**
  - Subcut (Adults): Target dose of 22 mcg 3 times/wk — Start with 4.4 mcg 3 times/wk for 2 wk, then increase to 11 mcg 3 times/wk for 2 wk, then increase to maintenance dose of 22 mcg 3 times/wk; Target dose of 44 mcg 3 times/wk — Start with 8.8 mcg 3 times/wk for 2 wk, then increase to 22 mcg 3 times/wk for 2 wk, then increase to maintenance dose of 44 mcg 3 times/wk.

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if serum bilirubin exceeds 5 times the upper limit of normal. Once the absolute neutrophil count is >750/mm³ or the hepatic enzymes have returned to normal, therapy can be restarted at 50% of the original dose. Thyroid function tests should also be monitored every 6 mo, especially in those patients with a history of thyroid abnormalities.

Potential Nursing Diagnoses
Deficient knowledge, related to medication regimen (Patient/Family Teaching)

Implementation
- Do not confuse products. Interferon beta-1a and interferon beta-1b are not interchangeable.
- Administer: Reconstitute with 1.1 mL of diluent and swirl gently to dissolve. Do not shake the vial. Inject into the thigh or upper arm. Keep reconstituted solution in refrigerator; inject within 6 hr of reconstitution.
- Avonex: Administer subcutaneously via pre-filled, single-use syringe at the same time (preferably the late afternoon or evening) on the same days (Monday, Wednesday, Friday) at least 48 hr apart each wk. Rotate sites with each injection to minimize risk of injection site reactions. Discard unused portions. Store in refrigerator.
- Rebif: Administer subcutaneously at the same time (preferably the late afternoon or evening) on the same days (Monday, Wednesday, Friday) at least 48 hr apart each wk. Rotate sites with each injection to minimize risk of injection site reactions. Discard unused portions. Store in refrigerator.

Patient/Family Teaching
- Show Care Issues: Instruct patient in correct technique for injection and care and disposal of equipment. Caution patient not to reuse needles or syringes and provide patient with a puncture-resistant container for disposal.
- Instruct patient to take medication as directed, do not change dose or schedule without consulting health care professional. Patients should receive a medication guide with each product.
- Advise patient that flu-like symptoms (fever, chills, myalgia, sweating, malaise) may occur during therapy. Acetaminophen may be used for relief of fever and myalgias.
- OB: Advise patient to notify health care professional if pregnancy is planned or suspected. May cause spontaneous abortion.

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

Why was this drug prescribed for your patient?