Ferumoxytol (fer-u-mox-yl-tol)

**Ferralsol**

**Classification**
Therapeutic: anti-anemics
Pharmacologic: iron supplements

**Pregnancy Category C**

**Indications**
Treatment of iron deficiency anemia in adult patients with chronic kidney disease (CKD).

**Action**
Consists of a superparamagnetic iron oxide coated with a carbohydrate shell; when the iron-carbohydrate complex enters the reticuloendothelial system (RES), iron is released from the iron-carbohydrate complex within macrophages. This iron can enter the intracellular storage iron pool or be transferred to erythroid precursor cells for incorporation into hemoglobin.

**Pharmacokinetics**

**Absorption:** IV administration results in complete bioavailability of iron-carbohydrate complex, however iron may not be liberated until incorporation into RES.

**Distribution:** Taken up by RES.

**Metabolism and Excretion:** Iron can either become part of intracellular ferritin or be transferred to erythroid precursor cells.

**Half-life:** 15 hr.

**TIME/ACTION PROFILE (effect on anemia)**

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV</td>
<td>unknown</td>
<td>unknown</td>
<td>up to 1 mo</td>
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</table>

**Contraindications/Precautions**

- **Contraindicated in:** Hypersensitivity; Evidence of iron overload; Anemia not due to iron deficiency; **Age-related** (renal/hepatic function, concurrent diseases, other drug therapy); OB: Use only if potential benefit justifies potential risk to the fetus; Pedi: Use cautiously in renal/hepatic/cardiac dysfunction; MRI: Use cautiously in patients with magnetic metal implants.

**Adverse Reactions/Side Effects**

- **CNS:** Dizziness.
- **CV:** Hypotension, hypertension, peripheral edema.
- **GI:** Constipation, diarrhea, nausea.
- **Hemat:** Iron overload.
- **Misc:** Hypersensitivity reactions including anaphylaxis and anaphylactoid reactions.

**Interactions**

**Drug-Drug:** May interfere with absorption of concurrently administered oral iron preparations.

**Route/Dosage**

- IV (Adults and Children ≥ 18 yr): 510 mg initially, followed by a second 510-mg IV injection 3 to 8 days later. Course may be repeated after 1 mo.

**NURSING IMPLICATIONS**

**Assessment**
- Assess nutritional status and dietary history to determine need for patient teaching.
- Assess bowel function for constipation or diarrhea. Notify health professional and use appropriate measures should these occur.
- Monitor BP frequently following administration until stable. May cause hypotension. For patients receiving hemodialysis, administer ferumoxytol once the BP is stable and at least 1 hr of hemodialysis has been completed.
- Observe patient for signs and symptoms of anaphylaxis (cardiac/respiratory arrest, clinically significant hypotension, syncope, unresponsiveness, rash, pruritus, urticaria, laryngeal edema, wheezing) for at least 30 min following injection. May occur with first or subsequent doses. Notify health care professional immediately if these occur. Keep epinephrine and resuscitation equipment close by in the event of an anaphylactic reaction.
- Consider MRI studies prior to administration. Alteration of MRI studies may persist for up to 3 mo following a dose. If imaging is required within 3 mo after administration, use T1- or proton density-weighted MR pulse sequences to decrease effects; MRI using T2-weighted pulse sequences should not be performed within 3 mo after administration.
than 4 weeks after administration, maximum alteration of vascular MRI is evident for 1–2 days after dose. Ferumoxytol does not interfere with x-ray, computed tomography (CT), or positron emission tomography (PET), single photon emission computed tomography (SPECT), ultrasonography, or nuclear imaging.

Lab Test Considerations: Monitor hemoglobin, ferritin, iron, and transferrin saturation prior to and at least 1 mo following second dose and regularly thereafter. Iron and transferrin-bound iron may be underestimated within first 24 hr by measuring iron in the ferumoxytrol complex.

Potential Nursing Diagnoses
Activity intolerance

Implementation

Intermittent Infusion: Administer undiluted. Do not administer solutions that are discolored or contain particulate matter. Solution may be stored at room temperature.
Rate: Administer at a rate of 1 mL/sec (30 mg/sec).

Patient/Family Teaching

Explain purpose of iron therapy to patient.
Advise patient to avoid MRI studies during and for 3 mo following ferumoxytol therapy.
May cause dizziness. Caution patient to avoid driving or other activities requiring alertness until response to medication is known.
Advise patient to report signs and symptoms of hypersensitivity reactions (rash, itching, dizziness, swelling, and breathing problems) to health-care professional immediately.

Evaluation/Desired Outcomes

Improvement in iron deficiency anemia.

Why was this drug prescribed for your patient?