Iron dextran (eye-ern dex-tran)
DexFerrum, InFeD

**Classification**
Therapeutic: antianemics
Pharmacologic: iron supplements

**Pregnancy Category:** C

**Indications**
IM, IV: Treatment of iron deficiency in patients who cannot tolerate or receive oral iron.

**Action**
An essential mineral found in hemoglobin, myoglobin, and many enzymes. Enters the bloodstream and is transported to the organs of the reticuloendothelial system (liver, spleen, bone marrow) where it is separated from the dextran molecule and becomes part of iron stores.

**Therapeutic Effects:** Resolution of iron deficiency anemia.

**Pharmacokinetics**

**Absorption:** Approximately 5–10% of dietary iron is absorbed (up to 30% in deficiency states). Absorption with IV administration is complete. Well absorbed following IM administration.

**Distribution:** Remains in the body for many months. Crosses the placenta; enters breast milk.

**Protein Binding:** 90%.

**Metabolism and Excretion:** Mostly recycled; small daily losses occurring via desquamation, sweat, urine, and bile.

**Half-life:** 6 hours.

**TIME/ACTION PROFILE (effects on erythropoiesis)**

<table>
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<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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</thead>
<tbody>
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<td>IM, IV</td>
<td>4 days</td>
<td>1–2 wk</td>
<td>wks–mos</td>
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**Contraindications/Precautions**

- **Contraindicated in:** Anemia not due to iron deficiency; Hemochromatosis, Hemangioma, Hypersensitivity to iron dextran; Infants < 6 mos.
- **Use Cautiously in:** Severe hepatic impairment; Pre-existing cardiovascular disease (disease may be exacerbated by adverse reactions to iron dextran); Significant allergies or asthma; History of drug allergy or multiple drug allergies (may be at risk for anaphylactic reactions); Rheumatoid arthritis (may have exacerbation of joint swelling).

**Adverse Reactions/Side Effects**

**CNS:** Seizures, dizziness, headache, syncope.

**CV:** Hypotension, tachycardia.

**GI:** Abdominal pain, nausea, vomiting, taste disorder.

**Derm:** Flushing, urticaria.

**Local:** Pain at IM site, phlebitis at IV site; skin staining at IM site.

**MS:** Arthralgia, myalgia.

**Misc:** Allergic reactions including anaphylaxis, fever, lymphadenopathy, sweating.

**Interactions**

**Drug-Drug:** Chloramphenicol and vitamin E may impair hematologic response to iron therapy. ACE inhibitors may enhance risk of anaphylactic reaction.

**Route/Dosage**

**IM, IV (Adults and Children):** Test dose of 0.5 mL (25 mg) is given 1 hr prior to therapy.

**IM, IV (Infants):** Test dose of 0.25 mL (12.5 mg) is given 1 hr prior to therapy.

**IM, IV (Adults and Children > 15 kg):** Iron deficiency—Total dose (ml) = 0.0476 * (actual Hgb) / 5 kg lean body weight (up to maximum of 14 mL). Divided up and given in small daily doses until total is reached; not to exceed 100 mg/day. Total dose IV infusion—Total dose may be diluted and infused over 4–5 hr following a test dose of 10 drops (unlabeled).

**IM, IV (Children 5–15 kg):** Iron deficiency—Total dose (ml) = 0.0476 * (actual Hgb) / 5 kg lean body weight (up to maximum of 14 mL). Divided up and given in small daily doses until total is reached; not to exceed 50 mg/kg/week with epoetin alfa therapy.

**IM, IV (Adults):** Blood loss—Dose (ml) = (Blood loss [ml] / hematocrit) * 0.02 (0.2–1 mL/kg/day or 20 mg/kg/week with epoetin alfa therapy).

**IV (Neonates):** 0.2–1 mg/kg/day or 20 mg/kg/week with epoetin alfa therapy.

**NURSING IMPLICATIONS**

**Assessment**

- **Before therapy:** Obtain baseline nutritional status and dietary history. Determine possible cause of anemia, and need for patient teaching.

- **During therapy:** Monitor patient for adverse reactions to iron therapy. Monitor response to therapy. Monitor CBC with differential in children < 2 kg and adults. Monitor liver function tests in children < 10 kg. Do not administer in patients with low hematocrit levels (hematocrit < 20%).

- **After therapy:** Monitor for anemia, iron deficiency, and other anemias. Monitor CBC with differential in children < 2 kg and adults. Monitor liver function tests in children < 10 kg. Do not administer in patients with low hematocrit levels (hematocrit < 20%).
● Assess bowel function for constipation or diarrhea. Notify health care professional and use appropriate nursing measures should these occur.

● Monitor BP and heart rate frequently following IV administration until stable. Rapid infusion rate may cause hypotension and flushing.

● Assess patient for signs and symptoms of anaphylaxis (rash, pruritus, laryngeal edema, wheezing). Notify health care professional immediately if these occur. Keep epinephrine and resuscitation equipment close by in the event of an anaphylactic reaction.

Lab Test Considerations:

- Monitor hemoglobin, hematocrit, and reticulocyte values prior to and every 3 wk during the first 2 mo of therapy and periodically thereafter. Serum ferritin and iron levels may also be monitored to assess effectiveness of therapy.

- Monitor hemoglobin, hematocrit, reticulocyte values, transferrin, ferritin, total iron binding capacity, and plasma iron concentrations periodically during therapy. Serum ferritin levels peak in 7–9 days and return to normal in 3 wk. Serum ferritin determination may be inaccurate for 1–3 wk after therapy with large doses; therefore, hemoglobin and hematocrit are used in this early period. Normal hemoglobin concentrations of 14.8 g/100 mL should be used for patients weighing >15 kg, while 12 g/100 mL should be used for patients weighing 15 kg or less.

- May impart a brownish hue to blood drawn within 4 hr of administration. May cause false increases in serum bilirubin and decrease in serum calcium values.

- Prolonged PTT may be calculated when blood sample is anticoagulated with citrate dextrose solution; use sodium citrate instead.

Toxicity and Overdose:

- Early symptoms of overdose include stomach pain, fever, nausea, vomiting (may contain blood), and diarrhea. Late symptoms include bluish lips, fingernails, and palms; drowsiness; weakness; tachycardia; seizures; metabolic acidosis; hepatic injury; and cardiovascular collapse. Patient may appear to recover prior to the onset of late symptoms. Hospitalization continues for 24 hr after patient becomes asymptomatic to monitor for delayed onset of shock or GI bleeding. Late complications of overdose include intestinal obstruction, pyloric stenosis, and gastric scarring.

- If patient is comatose or seizing, gastric lavage with sodium bicarbonate is performed. Deferoxamine is the antidote. Additional supportive treatments to maintain fluid and electrolyte balance and correction of metabolic acidosis are also indicated.

Potential Nursing Diagnoses

- Activity intolerance (Indications)

Implementation

- Discontinue oral iron preparations prior to parenteral administration.

- Iron Dextran: The 2-mL ampule may be used for IM or IV administration; the 10-
  mL multidose vial may be used only for IM administration.

- Prior to initial IM or IV dose, a test dose of 25 mg should be given by the same route as the dose will be given, to check for allergy reaction. The IV test dose should be administered over 5 min. The IM dose should be administered in the same injection site and by same technique as the therapeutic dose. The remaining portion may be administered after 1 hr, if no adverse symptoms have occurred.

- IM: Inject deeply via Z-track technique into upper outer quadrant of buttock, never into arm or other exposed area. Use a 2–3 in. 19- or 20-gauge needle. Change needles between withdrawal from container and injection to minimize staining of subcutaneous tissues. Stains are usually permanent.

- IV Administration

  - pH: 5.2–6.5.

  - IV: Following IV administration, patient should remain recumbent for at least 30 min to prevent orthostatic hypotension.

  - Direct IV: Administer undiluted. Rate: Administer slowly at a rate not to exceed 50 mg (1 mL)/min.

- Y-Site Incompatibility: Discontinue other IV solutions during infusion.

- Additive Incompatibility: Iron dextran should not be admixed with any other medications or parenteral nutrition solutions.

Patient/Family Teaching

- Explain purpose of iron therapy to patient. Advise patient to avoid iron supplementation during therapy unless instructed by health care professional.

- Adverse reactions may occur 1–2 days after administration and may last 1–4 days if large IV doses used. 3–7 days with IM route. Instruct patient to contact health care professional if fever, chills, malaise, muscle and joint pain, nausea, vomiting, diarrhea, and backache occur.

Evaluation/Desired Outcomes

- Improvement in iron deficiency anemia.

Why was this drug prescribed for your patient?

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