**Iron Sucrose**

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<th>Brand names</th>
<th>Venofer</th>
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### Medication error potential
USP reports that Venofer has been confused with Vfend and Viread. No patient harm resulted.\(^1\)

### Contraindications and warnings

**Contraindication:** Known hypersensitivity to iron sucrose.\(^2\)

**Warnings:** Serious hypersensitivity reactions, some fatal, have been reported. Patients may present with shock, hypotension, loss of consciousness, and/or collapse. If these or any signs of intolerance occur during infusion, stop iron sucrose immediately. Monitor patient during and for at least 30 minutes and until clinically stable after completion of infusion.\(^2\)

Hypotension may occur after infusion; it may be related to rate of administration or total dose infused.\(^2\)

Iron overload is possible with excessive parenteral iron therapy. Periodic monitoring of hematologic parameters is required (hemoglobin [Hb], hematocrit, serum ferritin, and transferrin saturation.) Do not perform serum iron measurements for at least 48 hours after completion of IV iron.\(^2\)

### Infusion-related cautions
Serious hypersensitivity reactions may occur during or up to 30 minutes after infusion. (See Warnings in the Contraindications and Warnings section.) Symptoms have occurred after first or subsequent doses and may respond to IV fluids, hydrocortisone, antihistamines, and/or slowing the infusion rate. Personnel and therapies to treat serious hypersensitivity must be immediately available when administering iron sucrose. Most reactions occur within 30 minutes of completion of infusion.\(^2\)

Extravasation may cause injection site discoloration.\(^2\)

### Dosage
Doses expressed as mg or mg/kg refer to mg elemental iron per kg or per dose.

**Total iron deficit equation for calculating replacement dose has been calculated in more than one manner:**

**Equation 1:** Total iron deficit (mg) = \([\text{target Hb (12 g/dL) – actual Hb}] \times \text{wt (kg)} \times 0.24 + [15 \times \text{wt (kg)}]\)^\(^3,4\)

**Equation 2:** Total iron deficit (mg) = \([(\text{normal Hb for age (g/dL) – initial Hb})/100] \times \text{blood volume (mL)} \times 3.4 \times 1.5\)^\(^5\) In this equation, 3.4 converts grams Hb to mg iron, and 1.5 is a factor to provide extra iron to replace depleted tissue stores.

**Chronic kidney disease, hemodialysis dependent (IV)**

**Iron maintenance:** FDA-labeled dosing: (age ≥2 years) 0.5 mg/kg (max 100 mg/dose) q 2 wk × 12 wk.\(^2,6\) Doses of 1 mg/kg and 2 mg/kg were not superior to 0.5 mg/kg (using same frequency) in a randomized controlled trial.\(^6\) Dosing regimens from additional studies: In a prospective study of 14 patients ages 2–15 years, 0.3 mg/kg/dialysis session 3 times a week maintained steady iron status.\(^7\) In a prospective study (designed to monitor adverse event rates) in 92 patients (3 mo–18 yr) receiving a total of 935 doses, 2 mg/kg max 100 mg monthly was well tolerated. This study did not report on efficacy of the dosing regimen.\(^8\)

**Iron replacement:** In a prospective study of 14 patients ages 2–15 years, 1 mg/kg/dialysis session (3 times a week) achieved a gradual increase in ferritin to 100–400 mcg/L (3 mg/kg/dialysis session initially used but found to cause supratherapeutic ferritin).\(^7\) In a prospective study (designed to monitor adverse event rates) in 92 patients (3 mo–18 yr) receiving a total of 935 doses, the following regimens were used: 5 mg/kg max 200 mg in 50 mL NS over 90 minutes q 24 hr × 2 doses (n = 72) or 2 mg/kg max 100 mg undiluted over 3 minutes (n = 20); both regimens were tolerated well (no hemodynamic events). This study did not report on efficacy of the dosing regimen.\(^8\)
Iron Sucrose

**Dosage (cont.)**

Chronic kidney disease, nondialysis dependent or peritoneal dialysis dependent and on erythropoietin therapy (IV)

**Iron maintenance:** FDA-labeled dosing: (age ≥2 years) 0.5 mg/kg (max 100 mg/dose) q 4 wk × 12 wk.(2,5,6) Doses of 1 mg/kg and 2 mg/kg were not superior to 0.5 mg/kg (using same frequency) in a randomized controlled trial.(6) Dosing regimens from additional studies: In a prospective study (designed to monitor adverse event rates) in 92 patients (3 mo–18 yr) receiving a total of 935 doses, 2 mg/kg max 100 mg monthly was well tolerated. This study did not report on efficacy of the dosing regimen.(8)

**Iron replacement:** In a prospective study (designed to monitor adverse event rates) in 92 patients (3 mo–18 yr) receiving a total of 935 doses, the following regimens were used: 5 mg/kg max 200 mg in 50 mL NS over 90 minutes q 24 hr × 2 doses (n = 72) or 2 mg/kg max 100 mg undiluted over 3 minutes (n = 20); both regimens were tolerated well (no hemodynamic events). This study did not report on efficacy of the dosing regimen.(8)

**Iron deficiency anemia refractory to oral iron:** Doses have ranged from 1.2 to 7 mg/kg with max recommended single doses ranging from 100 to 300 mg.(3,4,5,9) The largest study (n = 45, 11 mo–16 yr) calculated iron deficit using equation 2 above and gave 5 mg/kg/dose 3 times a week until total deficit was replaced (3 of 45 patients required dose reduction due to iron oversaturation; 1 with transient hypotension that resolved on drug dc).(5) Another study (n = 38, 3 mo–18 yr) calculated iron deficit using equation 1 above and divided the total replacement dose q 3-7 days, max 300 mg or 7 mg/kg/dose.(4) In 11 patients ages 2–13 yr with autosomal-recessive oral iron refractory iron deficiency anemia, iron deficit per equation 1 was replaced in divided doses q 48 hr, max 100 mg/dose; partial response was achieved (improved Hb, MCV, MCH (mean corpuscular hemoglobin) and ferritin at 6 weeks and 6 months after first course (p <0.05) and no further improvement after a second course.(4) A small study (n = 16) of children ages 2–16 yr with RLS/PLMD (restless legs syndrome/periodic limb movement disorder) and iron deficiency anemia received mean 3.6 mg/kg (1.21–6.6 mg/kg) × 1 dose.(9)

**Test doses:** The manufacturer does not recommend for or against test doses.(2) In some studies, test doses were not deemed necessary,(4,8) but in two studies, test doses were used. One gave a fixed dose of 10 mg to all patients (ages 2–15 yr),(7) and in another study, 25% of the initial dose was infused at a rate not to exceed 0.5 mg/min.(2)

**Dosage adjustment in organ dysfunction**

See the Dosage section for dosing in kidney disease. No information available for adjustments needed in hepatic dysfunction. Iron sucrose is not dialyzable through CA210 (Baxter) High Efficiency or Fresenius F80A High Flux dialysis membranes.(2)

**Maximum dosage**

Manufacturer(2) and others(4,8) recommend/use max 100 mg/dose for iron maintenance therapy. For iron replacement, not established. The following max single doses have been studied or are recommended: 100 mg,(3) 200 mg if given as intermittent infusion over 90 minutes or 100 mg if IV push,(8) and 300 mg or 7 mg/kg.(4)

**Additives**

Contains 30% sucrose w/v (300 mg/mL).(2) Product is preservative-free.(2)

**Suitable diluents**

NS(2)

**Maximum concentration**

20 mg elemental iron per mL (undiluted)(2)