



DUQUESNE
UNIVERSITY

MYLAN SCHOOL OF PHARMACY

PIC QUESTION OF THE WEEK: 10/26/09

Q: What is the relative efficacy and safety of parenteral iron preparations?

A: Parenteral iron preparations are indicated for treatment of iron deficiency anemia (IDA) in patients with chronic kidney disease (CKD) and patients receiving chemotherapy. Parenteral iron therapy is significantly superior to oral iron supplementation in patients with CKD and is also more cost-effective, particularly in those undergoing hemodialysis or peritoneal dialysis. Iron dextran, iron sucrose, ferumoxitol, and sodium ferric gluconate complex are the currently available parenteral iron preparations. Iron sucrose appears to be the safest of these products while sodium ferric gluconate is considered to be relatively safe. Available data suggests that ferumoxitol is also well tolerated. Iron dextran has long been associated with anaphylactic-type reactions and potential fatalities following intravenous administration. This is related to the immunogenicity of the polysaccharide dextran component. The Food and Drug Administration (FDA) recently advised healthcare professionals of a **new Boxed Warning** on iron dextran preparations. The previous Warning has been modified to include the following information (see link in Reference section):

- administer a test dose prior to the first therapeutic dose; if no signs or symptoms of anaphylactic-type reactions follow the test dose, administer the full therapeutic dose
- *fatal reactions* have occurred following a *test dose* and during administration even when the *test dose* was *negative*
- note that patients with a history of drug allergy as well as those receiving ACE inhibitors may be at increased risk of anaphylactic-type reactions

Parenteral iron preparations are considered to be effective for treating IDA in patients with CKD; however, larger comparative studies are necessary to better evaluate these products. The accompanying table identifies the available parenteral iron preparations as well as their significant adverse effects.

Parenteral Iron Preparations

Brand Name	Generic Name	Elemental Iron per mL	Route	Significant Adverse Effects
Feraheme®	ferumoxitol	30mg	IV	anaphylaxis, back pain, chest pain, abdominal pain, hypotension, dyspnea, nausea, vomiting, cardiac arrest, sweating, coma, death (<i>the frequency of life-threatening adverse events is highest with iron dextran products</i>)
InFeD® DexFerrum®	iron dextran	50mg	IV, IM	
Venofer®	iron sucrose	20mg	IV	
Ferrlecit®	sodium ferric gluconate	12.5mg	IV	

References:

- Chertow GM, Mason PD, Vaage-Nilsen O et al. Update on adverse drug events associated with parenteral iron. *Nephrol Dial Transplant* 2006;21:378-82.
- Dexferrum (iron dextran injection) – labeling change. Food and Drug Administration. Available at: <http://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsforHumanMedicalProducts/ucm186899.htm>. Accessed October 21, 2009.

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