This policy has been developed through review of medical literature, consideration of medical necessity, generally accepted medical practice standards, and approved by the IEHP Pharmacy and Therapeutic Subcommittee.

**Drug:** iron dextran (INFed), sodium ferric gluconate complex (Ferrlecit), iron sucrose (Venofer), ferumoxytol (Feraheme), ferric carboxymaltose (Injectafer)

**Class:** IV Iron Supplementation

**Formulary Medication:** None

**Effective Date:** November 19, 2014

**Revision Date:** November 19, 2014

**Policy/Criteria:**

1. **Iron-Deficiency Anemia (IDA) with chronic kidney disease**
   a. Hemodialysis dependent chronic kidney disease (CKD) and receiving erythropoietin
      - Target to maintain serum ferritin > 200 ng/mL and total saturation of transferring >20%
      - Iron sucrose (Venofer) and sodium ferric gluconate complex (Ferrlecit) are the preferred IV iron products
   
   b. Peritoneal dialysis dependent CKD and receiving erythropoietin
      - Failed or contraindicated to oral iron supplements
      - Target to maintain serum ferritin > 100 ng/mL and total saturation of transferrin >20%
      - Iron sucrose (Venofer) is the preferred IV iron product

   c. Non-dialysis dependent CKD
      - Failed or contraindicated to oral iron supplements
      - Target to maintain serum ferritin > 100 ng/mL and total saturation of transferrin >20%
      - Iron sucrose (Venofer) is the preferred IV iron product

2. **Iron-Deficiency Anemia (IDA) associated with insufficient response or contraindication to oral iron supplementation** (E.g. IDA of pregnancy)
   a. Iron dextran (INFed) and Iron sucrose (Venofer) are the preferred IV iron products
3. **Ferumoxytol (Feraheme)**
   a. IDA with chronic kidney disease AND insufficient response or intolerance to iron sucrose (Venofer) and sodium ferric gluconate complex (Ferrlecit)

4. **Ferric Carboxymaltose (Injectafer)**
   a. IDA with failure or contraindication to oral iron supplementation
      - AND insufficient response or intolerance to iron sucrose (Venofer) or iron dextran (INFeD)
   b. OR IDA with non-dialysis dependent CKD (Target to maintain serum ferritin > 100 ng/mL and total saturation of transferrin >20%)
      - AND failed, contraindicated or intolerant to oral iron supplement and iron sucrose (Venofer)

**Clinical Justification:**

*Comparison of FDA-Approved Indications*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Ferric Carboxymaltose</th>
<th>Ferumoxytol</th>
<th>Iron Dextran</th>
<th>Iron Sucrose</th>
<th>Sodium Ferric Gluconate Complex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron deficiency anemia in non-dialysis CKD</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>Iron deficiency anemia in CKD</td>
<td></td>
<td>X</td>
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<tr>
<td>HD-dependent CKD patients receiving erythropoietin</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Iron deficiency in patients with inadequate response to oral iron</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Peritoneal dialysis-dependent patients receiving erythropoietin</td>
<td></td>
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<td>X</td>
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</tbody>
</table>

- In people with hemodialysis dependent CKD, the preferred route of iron administration is IV. In people with non-dialysis dependent CKD or peritoneal dialysis dependent CKD, the route of iron administration can be IV or oral.
- A Black Box Warning, risk for anaphylactic reactions, was issued by FDA for iron dextran. Hence, a test dose for iron dextran is recommended.
- Iron sucrose (Venofer), sodium ferric gluconate (Ferrlecit), ferric carboxymaltose (Injectafer) and ferumoxytol (Feraheme) may be associated with fewer cases of serious adverse effects than iron dextran (INFeD).
• According to the Kidney Disease Improving Global Outcomes Anemia Work Group clinical practice recommendations for anemia in chronic kidney disease, there are no adequately powered studies that provide direct comparison among different intravenous iron agents.
• Ferric carboxymaltose (Injectafer) has efficacy comparable with iron sucrose in patients with iron-deficient anemia and non-dialysis dependent chronic kidney disease, with the advantage of fewer administrations per treatment course.
• Limited data on comparing efficacy of ferumoxytol (Feraheme) with other injectable iron agents, and tolerability data have been published.
• Various iron intravenous formulation are effective in treating IDA of pregnancy, including iron sucrose, sodium ferric gluconate complex and iron dextran. Furthermore, intravenous iron sucrose was beneficial for treatment of IDA of chronic heart failure, ulcerative colitis and Crohn’s disease.

<table>
<thead>
<tr>
<th></th>
<th>Dosing (Body weight 70kg)</th>
<th>Estimated Drug Costs/7 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric Carboxymaltose (Injectafer)</td>
<td>750mg separated by ≥ 7 days</td>
<td>S795</td>
</tr>
<tr>
<td>Ferumoxytol (Feraheme)</td>
<td>510 mg, followed by a second 510 mg dose 3-8 days later</td>
<td>$1066</td>
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<tr>
<td>Iron Dextran (Infed)</td>
<td>100mg daily until the calculated total iron amount is reached</td>
<td>$168</td>
</tr>
<tr>
<td>Iron Dextran (Dexferrum)</td>
<td>100mg daily until the calculated total iron amount is reached</td>
<td>$252</td>
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<tr>
<td>Iron Sucrose (Venofer)</td>
<td>HD: 100mg per consecutive session</td>
<td>$144</td>
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<td>Non-HD: 200mg on 5 occasions over a 14-day period</td>
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<tr>
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<td>PD: 300mg on day 1, and 14, then 400mg on day 28</td>
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<tr>
<td>Sodium Ferric Gluconate Complex (Ferrlecit)</td>
<td>125mg per consecutive hemodialysis session</td>
<td>$191</td>
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</table>
References: