# Iron Polymaltose Infusion

**SCOPE (Area):** Acute  
**SCOPE (Staff):** Medical, Nursing and Pharmacy

## APPLICATION OF Guideline

| Areas where Guideline applicable | Same Day Unit, 4N, 4S, 3N, 3S, 2N, CCU. |
| Areas where Guideline not applicable | Dialysis Unit (Please refer to “Intravenous Infusion of Iron during Haemodialysis” Protocol for use in dialysis). |

## Guideline

### Background

Iron is an essential element required for the formation of haemoglobin and myoglobin.

**Generic Name:** Iron Polymaltose Complex  
**Proprietary Name:** Ferrosig®, Ferrum H®  
**Presentation:** Ampoules containing elemental iron 100mg/2ml, in the form of iron polymaltose complex 318mg

### Clinical Condition and circumstances for use

Iron polymaltose infusion is indicated for the treatment of iron deficiency anaemia when:
- Oral therapy is contraindicated.
- Enteric absorption of iron is defective.
- Patient non compliance or persistent gastrointestinal intolerance makes oral therapy impractical.
- Inadequate response to oral iron.
- The intramuscular route is impractical or unacceptable.

### Purpose and Scope

**Purpose:** To ensure the appropriate use and safe administration of Iron Polymaltose infusion in the designated clinical areas.

At Ballarat Health Services, parenteral iron is administered as iron polymaltose by intravenous infusion. The appropriate dose required is calculated using the formula and/or table provided.

### Contraindications

- History of allergic reaction to iron polymaltose.
- Anaemia not caused by simple iron deficiency.
- Iron overload.
- Chronic polyarthritis.
- Infectious renal complaints in acute phase.
- Uncontrolled hyperparathyroidism.
- Decompensated hepatic cirrhosis, infectious hepatitis.
- Patients with severe inflammation or infection of the kidney or liver as iron tends to accumulate in inflamed tissues.
- First trimester of pregnancy.
Precautions

Patients with the following conditions may be at a higher risk of adverse reactions;
- Bronchial asthma,
- Low iron binding capacity
- Folic acid deficiency
- History of allergic disorders
- Hepatic insufficiency
- Cardiovascular disease
- Rheumatoid arthritis

Prior to commencement of the Infusion:

- The medical officer must check for previous adverse reactions to intravenous iron polymaltose prior to commencement of the infusion
- Patients with multiple drug allergies may be at higher risk of developing adverse reactions
- Premedication should be reserved for patients with a known previous reaction to iron infusion (Refer Premedication Section).
- The patient must be educated about possible adverse reactions both immediate and delayed which may include:
  - Skin itching and urticaria
  - Bronchospasm, dyspnoea
  - Back pain
  - Nausea, indigestion, abdominal pain
  - Headache
  - Hypotension
  - Tachycardia
  - Joint or muscle pain
  - Syncope
  - Circulatory collapse
- Establish patent IV access
- Ensure oxygen and suction equipment are available and in working order
- Ensure the resuscitation trolley and emergency drugs are accessible
- Ensure the patient's call bell is within reach and instruct them to use it should they become aware of any adverse reaction throughout the infusion
- The medical officer is required to remain with the patient for the first 5 minutes of the infusion

Premedication

- There is not a requirement for routine premedication in patients with no history of a previous adverse reactions to iron infusions.
- Premedication should be reserved for patients with a previous adverse reaction to an iron infusion and administered to the patient at least 30 minutes prior to commencement of the infusion as per the following recommendation:
  - Hydrocortisone 100mg IV
  - Promethazine hydrochloride 12.5mg IM
- Deep intramuscular injection is the preferred parenteral route of administration for promethazine hydrochloride
- Promethazine should NOT be administered intravenously unless the benefits outweigh the risks in an individual patient (ie in emergency situations or situations where IM injections are contraindicated).
- When promethazine has been administered, the patient must be advised that they are not to drive or operate machinery for at least 12 hours due its sedating effects.
**Dosage and Administration**

**IV Infusion Administration Procedure**

- The iron polymaltose must be prescribed by a medical officer on the Intravenous Orders MR/645. The infusion is ordered as elemental iron, not iron polymaltose.
- Iron Polymaltose is compatible only with 0.9% Sodium Chloride, and is not to be mixed with other drugs or solutions.
- The calculated dose to be administered is to be added to 500 mL 0.9% Sodium Chloride. (NB In fluid restricted patients it may be necessary to give the total dose in divided doses at the same concentration in smaller volumes).
- Add the required dose of iron polymaltose via a 5 micron filter, available from pharmacy (or stores).
- Iron must not be injected into the tubing of the IV giving set.
- Up to 2,500mg of elemental iron may added to 500 mL 0.9% sodium chloride.
- Protect infusion bag from light by using a black (or other light protective) bag, once prepared and during administration.

**Infusion Rate**

The infusion should be commenced at a slow rate initially to determine if a major reaction will occur (see Monitoring).

The infusion must be administered by a volume controlled infusion pump:
- Infuse the first 50 mL at an infusion rate of 40 mL/hr as the test dose.
- If well tolerated and no signs of adverse reaction after the first 1 hr and 15 minutes, increase the infusion rate to 120mL/hr for the remainder of the infusion.
- Total infusion time is approximately 5 hours.

**Monitoring**

Adverse reactions, both local and systemic, are rare but can include anaphylaxis or anaphylactoid reactions:
- There is no requirement for routine pre-medication to prevent the development of adverse drug reactions from iron polymaltose. (Newnham, Ahmad, Thornton and Gibson, 2006)

Despite this, the potential for reactions to occur is still present. These reactions occur typically within the first few minutes of administration and are generally characterised by sudden onset of respiratory difficulties, tachycardia and hypotension. These reactions should be treated immediately.

The patient should be in an area where they can be closely monitored throughout the duration of the infusion:
- The medical officer must remain with the patient for the first 5 minutes of the infusion.
- It is recommended that infusions are not administered after hours unless urgently required and a medical officer available.
- During the first 15 minutes of infusion the patient must be directly observed and monitored by the nurse.

Record vital signs, including heart rate, blood pressure, respiratory rate, temperature and oxygen saturation:
- Prior to commencement of infusion (baseline)
- Every 15 minutes for the first 30 minutes
- Every 30 minutes for the following 60 minutes
- Every 60 minutes for remainder of the infusion.

The patient should remain under supervision for at least one hour after the infusion is completed.
### Dosage and Administration (cont.)

#### Symptoms of Anaphylaxis

- Anaphylactoid reactions occur most frequently within the first several minutes of administration and are generally characterised by the following:
  - Sudden onset of respiratory difficulties including angioedema, wheezing, urticaria, respiratory and circulatory changes

**STOP the infusion immediately if any of these symptoms occur**

- Contact the medical officer
- Call a MET response on 94444
- Ensure resuscitation trolley is available at the bedside

#### Determination of Required Dose

There are two methods to calculate the required iron dose using patient’s haemoglobin level and weight:

1) **The Manufacturer’s Dosage Table** (preferred method)

   *Total dose in milligrams = 100 x the number of ampoules*

   *Note: Total dose must not exceed 2500mg (=50mL)*

   Each ampoule contains elemental iron 100mg in 2mL, (in the form of iron polymaltose 318mg/2ml). The infusion is to be ordered as elemental iron, not iron polymaltose.

<table>
<thead>
<tr>
<th>Body Weight</th>
<th>Hb 60 g/L (6.0g/dL)</th>
<th>Hb 75 g/L (7.5g/dL)</th>
<th>Hb 90 g/L (9.0g/dL)</th>
<th>Hb 105 g/L (10.5g/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kg</td>
<td>ml</td>
<td>amps</td>
<td>mg*</td>
<td>ml</td>
</tr>
<tr>
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<td>49</td>
<td>24.5</td>
<td>2450</td>
<td>43</td>
</tr>
</tbody>
</table>

*mg indicates elemental iron, not iron polymaltose

2) **Alternatively for a patient with haemoglobin level (Hb) not listed in the above dosage table, the following formula can be used to calculate the dose:**

\[
\text{Iron dose (mg)} = (\text{target Hb}^* - \text{actual Hb in g/L}) \times \text{bodyweight (kg)} \times 0.24 + \text{iron depot}^{**}
\]

(NB. For conversion of Hb units of measure: 1.0g/dL = 10g/L)

* Target Hb - For patient who weighs ≤ 34kg = 130g/L
  - For patient who weighs > 34kg = 150g/L

** Iron depot - For patient who weighs ≤ 34kg = 15mg/kg
  - For patient who weighs > 34kg = 500mg

Example of calculation:

For a patient who weighs 60kg with actual Hb = 130g/L, and the target Hb is set to be 150g/L and the iron depot = 500mg

The required iron dose = (150 - 130) x 60 x 0.24 + 500mg = 788mg

(This approximates to 800mg = 8 ampoules = 16mL)
Reminder regarding iron content of Red Blood Cells Transfusion:
- After the transfusion of 1 unit of red blood cells, approximately 200mg of elemental iron is released following the breakdown of the transfused red blood cells. This should be taken into account when determining the dose of iron required.

<table>
<thead>
<tr>
<th>Drug Interactions</th>
</tr>
</thead>
</table>
| - Other oral iron preparations (oral iron absorption is decreased; oral therapy should not commence until at least one week after last iron infusion)
| - Angiotensin converting enzymes inhibitors may increase the risk of side effects with the iron infusion. |

<table>
<thead>
<tr>
<th>Adverse Reactions</th>
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<tbody>
<tr>
<td>Adverse reactions to parenteral iron polymaltose infusion have been reported infrequently. However, the following reactions are known to have occurred after parenteral iron therapy;</td>
</tr>
<tr>
<td>General: flushing, sweating, chills and fever, chest and back pain</td>
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<td>Hypersensitivity: anaphylaxis</td>
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<tr>
<td>Gastrointestinal: nausea and vomiting</td>
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<tr>
<td>CNS: headache, dizziness</td>
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<tr>
<td>Musculoskeletal: joint and muscle pain, arthralgia, sensation of stiffening of the arms, legs and face</td>
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<tr>
<td>Cardiovascular: faintness, syncope, tachycardia, hypotension, circulatory collapse</td>
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<tr>
<td>Haematological: generalised lymphadenopathy</td>
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<tr>
<td>Dermatological: rash, urticaria, angioneurotic oedema</td>
</tr>
<tr>
<td>Adverse reactions may be delayed by one or two days after treatment</td>
</tr>
</tbody>
</table>

REFERENCES


“Iron Polymaltose (Total Body Dose) Infusion” Bayside Health May 2008


Australian Medicines Handbook 2010

Ferrum H product information, MIMS

Ferrosig product information, MIMS

RELATED DOCUMENTS

Intravenous Infusion of Iron during Haemodialysis – PRO/I018 (Dialysis)