1.0 Title
Iron Infusion Administration

2.0 Purpose
To provide a comprehensive procedure ensuring the safe, appropriate and effective administration of intravenous (IV) iron preparations to patients, and to ensure compliance with National Safety and Quality Health Service Standards.

3.0 Procedure
Risk Management

Caution
Refer to the correct section in this procedure for the required iron product prescription and correct administration, to avoid the risks of interchangeable dosing and infusion rates between intravenous (IV) iron preparations. The iron infusion administration procedure aims to minimize the potential risks of anaphylaxis, anaphylactic type reactions, iron overload and para venous infiltration.

This procedure applies to adults only.

Contraindications to IV iron administration are:
- Pregnancy 1st trimester. Only if clearly necessary in the 2nd and 3rd trimester.
- Presence of infection or ongoing bacteremia (chronic infection requires risk/benefit assessment).
- Anaemia not caused by iron deficiency; iron overload or disturbances in utilisation of iron; hemochromatosis, hemosiderosis.
- Known hypersensitivity to IV iron preparations.
- Liver dysfunction (careful risk/benefit assessment), infectious hepatitis.
- Patients with asthma, low iron binding capacity or folic acid deficiency are particularly at risk of an allergic or anaphylactic reaction.

Caution is recommended in patients with a history of allergic disorders, hepatic insufficiency or cardiovascular disease. (Patients with rheumatoid arthritis and possibly other inflammatory diseases; e.g. ankylosing spondylitis, lupus erythematosus may be at particular risk of delayed reactions, including fever and exacerbation or reactivation of joint pain).
Administration of parenteral iron in quantities exceeding the amount needed to correct iron deficit may lead to accumulation of iron in storage sites eventually leading to hemosiderosis.

Diagnosis of iron deficiency must be based on laboratory tests such as serum ferritin and transferrin saturation.

Results of serum iron measurements obtained within one to two weeks of administration of doses > 200mg of IV iron should be interpreted with caution.

Extravasation can be painful, cause inflammation, tissue necrosis, sterile abscess and brown discoloration of skin. Apply ice for local vasoconstriction and DO NOT massage.

An iron infusion is a non-urgent procedure. Iron infusions must be administered during times of maximum clinical resources due to the risk of an adverse event occurring.

Iron Dose Calculation
Calculate the required iron dose by using either the Ganzoni or the simplified method.
Both methods for iron dose calculation must use the patient’s documented weight. Iron dose must not be calculated based on an assumed weight.

Ganzoni Method
Total body iron deficit/cumulative iron dose (mg) =

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

*The factor 0.24 = 0.0034 x 0.07 x 1,000:
For this calculation the iron content of haemoglobin = 0.34%, blood volume = 7% of the bodyweight, and 1,000 is the conversion from g to mg.

**Iron depot:
<35 kg body weight: iron depot = 15 mg/kg body weight
≥35 kg body weight: iron depot = 500 mg

Simplified Method (for adult patients of body weight ≥ 35kg)

<table>
<thead>
<tr>
<th>Hb g/L</th>
<th>Body weight 35 kg to &lt;70 kg</th>
<th>Body weight ≥70 kg*</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;100 g/L</td>
<td>1,500 mg</td>
<td>2,000 mg</td>
</tr>
<tr>
<td>≥100 g/L</td>
<td>1,000 mg</td>
<td>1,500 mg</td>
</tr>
</tbody>
</table>

*Use ideal body weight (IBW) in overweight patients. Click on IBW calculator at Calculator | Therapeutic Guidelines.
If underweight, use actual body weight.

Note: For pregnant patients the iron dose should be based on pre-pregnancy weight.
**Iron Dose Prescription**

Prescription for iron infusion must be charted on the standard IV Infusion and Additives Order Form$^{10}$.

Prescription must be legible. It must contain date and time of infusion$^{10}$.

The order must include appropriate terminology specific to the product, volume of diluent, duration of infusion and any special instructions$^{10}$. The name and signature of the prescriber must be legible with contact number and pager$^{10}$.

ALL DOSES of IRON shall be expressed as mg of ELEMENTAL IRON. IRON DOSES of different iron complexes are NOT directly COMPARABLE$^{11}$.

For compromised patients at risk of developing pulmonary edema, up to 2000mg of Iron Polymaltose (Ferrosig) can be added to 250mL of 0.9% sodium chloride, and administered at slow protocol rate (approximately 2hrs, 30 minutes)$^{10}$.

Alternatively, up to 1gm of Ferric Carboxymaltose (Ferinject) can be administered undiluted as an IV injection over 15 minutes. See Ferric Carboxymaltose (Ferinject) administration rates.

**Iron Dose, Volume and Administration Rates$^{1,5,11,13}$**

Iron preparations are for IV administration ONLY and MUST NOT be administered subcutaneously or intramuscularly.

VENOFER IS STRONGLY ALKALINE. If paravenous infiltration occurs apply ice – do not massage.

IRON DOSES of different iron complexes are NOT directly COMPARABLE$^{11}$.

The following dose, volume and administration rates apply to Adults only.
IRON DOSE, VOLUME AND INFUSION RATE

Ferric Carboxymaltose (Ferinject)
100mg/2mL or 500mg/10mL

Maximum single dose = 1000mg or 20mg/kg. No test dose required.

Cumulative doses greater than 1000mg (or 20mg/kg) must be split into two doses given at least one week apart.

IV Infusion

<table>
<thead>
<tr>
<th>Iron Dose</th>
<th>Volume</th>
<th>Infusion Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>100mg – 200mg</td>
<td>50 mL</td>
<td>3 minutes</td>
</tr>
<tr>
<td>&gt;200mg – 500mg</td>
<td>100mL</td>
<td>6 minutes</td>
</tr>
<tr>
<td>&gt;500mg – 1000mg</td>
<td>250mL</td>
<td>15 minutes</td>
</tr>
</tbody>
</table>

For stability reasons Ferric Carboxymaltose must not be diluted to concentrations less than 2mg/mL. The above table represents the minimum allowable Ferric Carboxymaltose concentration.

IV Injection

<table>
<thead>
<tr>
<th>Iron Dose</th>
<th>Volume</th>
<th>Injection rate</th>
<th>Injection time</th>
</tr>
</thead>
<tbody>
<tr>
<td>100mg – 500mg</td>
<td>2 - 10mL</td>
<td>100mg/minute</td>
<td>1 – 5 minutes</td>
</tr>
<tr>
<td>undiluted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;500mg – 1000mg</td>
<td>10-20mL</td>
<td>Slow push over 15 minutes</td>
<td>15 minutes</td>
</tr>
<tr>
<td>undiluted</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
IRON DOSE, VOLUME AND INFUSION RATE

Iron Polymaltose (Ferrosig)
100mg/2mL

Maximum single dose = 2500mg
Rapid or slow infusion protocol must be at the discretion of the prescriber.

IV Infusion

Slow Protocol – Total Infusion Time of approximately 4 hrs 30 minutes.  
Note: Up to 2000mg in 250mL 0.9% sodium chloride may also be administered at slow protocol rate or as ordered for compromised patients.

<table>
<thead>
<tr>
<th>Iron Dose</th>
<th>Volume</th>
<th>Infusion rate</th>
<th>Infusion time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 2500mg</td>
<td>500mL 0.9% sodium chloride</td>
<td>10mL @ 40mL/hr</td>
<td>For 15 minutes</td>
</tr>
<tr>
<td></td>
<td>Remaining volume @ 120mL/hr</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rapid Protocol – Total Infusion Time of approximately 1hr 15 minutes – 1hr 45 minutes.  
Appropriate for, but not restricted to renal patients and patients on fluid restriction.

<table>
<thead>
<tr>
<th>Iron Dose</th>
<th>Volume</th>
<th>Infusion rate</th>
<th>Infusion time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 1500mg</td>
<td>250mL 0.9% sodium chloride</td>
<td>10mL @ 40 mL/hour</td>
<td>For 15 minutes</td>
</tr>
<tr>
<td></td>
<td>Remaining volume @ 250mL/hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;1500mg – 2000mg</td>
<td>250mL 0.9% sodium chloride</td>
<td>10mL @ 40mL/hour</td>
<td>For 15 minutes</td>
</tr>
<tr>
<td></td>
<td>Remaining volume @ 166mL/hour</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If infusion related reaction occurs, temporarily stop infusion and initiate a clinical review. If the infusion is able to continue, restart at the same rate or at a reduced rate of 60mL/hour, as directed by the clinical review.

IV Infusion – For Haemodialysis Patients

<table>
<thead>
<tr>
<th>Iron Dose</th>
<th>Volume</th>
<th>Infusion rate</th>
<th>Infusion time</th>
</tr>
</thead>
<tbody>
<tr>
<td>100mg (1st dose)</td>
<td>50mL 0.9% sodium chloride</td>
<td>50mL/hour</td>
<td>1 hour</td>
</tr>
<tr>
<td>100mg Subsequent doses</td>
<td>50mL 0.9% sodium chloride</td>
<td>50mL/hour</td>
<td>1 hour</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100mL/hour</td>
<td>30 minutes</td>
</tr>
</tbody>
</table>
IRON DOSE, VOLUME AND INFUSION RATE

Iron Sucrose (Venofer)
100mg/5mL

Maximum single dose = 500mg  No test dose required

**IV Injection**

<table>
<thead>
<tr>
<th>Iron Dose</th>
<th>Volume</th>
<th>Injection rate</th>
<th>Injection time</th>
</tr>
</thead>
<tbody>
<tr>
<td>100mg</td>
<td>5mL</td>
<td>Slow push</td>
<td>2 – 5 minutes</td>
</tr>
<tr>
<td>undiluted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200mg</td>
<td>10mL</td>
<td>Slow push</td>
<td>2 – 5 minutes</td>
</tr>
<tr>
<td>undiluted</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**IV Infusion**

<table>
<thead>
<tr>
<th>Iron Dose</th>
<th>Volume</th>
<th>Infusion rate</th>
<th>Infusion time</th>
</tr>
</thead>
<tbody>
<tr>
<td>100mg</td>
<td>100mL 0.9% sodium chloride</td>
<td>105mL @ 420mL/hour</td>
<td>15 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200mg</td>
<td>100mL 0.9% sodium chloride</td>
<td>110mL @ 440mL/hour</td>
<td>15 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300mg</td>
<td>250mL 0.9% sodium chloride</td>
<td>265mL @ 177mL/hour</td>
<td>1 hour 30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>500mg</td>
<td>250mL 0.9% sodium chloride</td>
<td>275mL @ 79mL/hour</td>
<td>3 hours 30 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**IV Infusion – For Haemodialysis Patients**

<table>
<thead>
<tr>
<th>Iron Dose</th>
<th>Volume</th>
<th>Infusion rate</th>
<th>Infusion time</th>
</tr>
</thead>
<tbody>
<tr>
<td>100mg (1st dose)</td>
<td>50mL 0.9% sodium chloride</td>
<td>50mL/hour</td>
<td>1 hour</td>
</tr>
<tr>
<td>100mg Subsequent</td>
<td>50mL 0.9% sodium chloride</td>
<td>50mL/hour</td>
<td>1 hour</td>
</tr>
<tr>
<td>doses</td>
<td></td>
<td>100mL/hour</td>
<td>30 minutes</td>
</tr>
</tbody>
</table>
Administration

Standard precautions apply.

Five moments of hand hygiene apply to this procedure.

Patients receiving IV iron and their carers, must be provided with education including indication for use, intended effect, risks and benefits and potential side effects prior to commencement of the infusion. This may be in the form of information leaflets, a documented discussion or by way of written consent.

A General Guide to Iron and Iron Deficiency is available from BloodWatch, Clinical Excellence Commission. See Appendix 1. An information leaflet specific for IV iron is available from BloodSafe Intravenous (IV) Iron Infusion. See Appendix 2. For patients receiving Ferinject, the Ferinject Patient Leaflet may be used. See Appendix 3.

Obtain equipment; protective gloves, eyewear, medication order, 0.9% sodium chloride (depending on prescribed volume), iron preparation as per medication order, controlled infusion pump, IV medication additive label, and ensure Adrenaline and resuscitation equipment is available.

All IV iron preparations and administration must be checked for right patient, medication, dose and expiry, time, route, documentation, and infusion pump programming by 2 RNs or an RN and an EN.

Check for documented allergies.

Document baseline observations: Temperature, Pulse, Respiration, Blood Pressure, Alert Verbal Pain Unresponsive (AVPU), SaO₂, pain score and cannula site/patency; (paravenous leakage at the cannula site may potentially lead to long lasting brown discolouration of the skin and superficial phlebitis).

Draw up ordered iron dose. Add iron dose to ordered volume of 0.9% sodium chloride. Attach completed IV medication additive label (blue) to IV fluid bag. Prime a standard IV giving set for administration. Programme controlled infusion pump as per administration rates. Infusion should commence immediately after preparation.
Observations
All observations in Table 1 must be documented on the Electronic Medical Record2 (EMR2) Between the Flags (BTF) observation chart. Instruct the patient to inform staff immediately if they experience any burning or swelling around the cannula site⁵.

Table 1

<table>
<thead>
<tr>
<th>Ferric Carboxymaltose (Ferinject)</th>
<th>Baseline TPR &amp; BP, SaO₂ Cannula Site AVPU, Pain score</th>
<th>Bolus: 5 minutes after commencing bolus dose</th>
<th>Half hour after completion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Infusion: 5 minutely during the 15 minute infusion</td>
<td>On completion and 30 minutes after completion</td>
</tr>
<tr>
<td>Iron Polymaltose (Ferroxig)</td>
<td>Baseline TPR &amp; BP, SaO₂ Cannula Site AVPU, Pain score</td>
<td>Slow Protocol 5 minutely for the first 15 minutes</td>
<td>Then half hourly during infusion and 30 minutes after completion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rapid Protocol 5 minutely for first 15 minutes</td>
<td>Then 15 minutely during infusion and 30 minutes after completion</td>
</tr>
<tr>
<td>Iron Sucrose (Venofer)</td>
<td>Baseline TPR &amp; BP, SaO₂ Cannula Site AVPU, Pain score</td>
<td>Bolus: 5 minutes after commencing bolus dose</td>
<td>Half hour after completion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infusion: 5 minutely for first 15 minutes</td>
<td>Then half hourly during infusion and 30 minutes after completion</td>
</tr>
</tbody>
</table>

At completion of infusion, document in patient notes, fluid balance chart (if applicable), complete the IV fluid orders form and medication chart.

If the patient is discharged, they must be advised re delayed systemic reactions that can occur²,³. See Appendix 2.
Adverse Reactions both local and systemic are rare, but include anaphylaxis\(^5\).

**Adverse Reaction:** Cease the infusion immediately, escalate a clinical review with nurse in charge (including A-G assessment), and inform the medical officer if any adverse reaction(s) in Table 2 occur\(^6\). Patient care must also be escalated as per observations on the SAGO chart in accordance with the local Clinical Emergency Response System (CERS)\(^8\).

### Table 2

<table>
<thead>
<tr>
<th>SIGNS AND SYMPTOMS OF ADVERSE REACTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
</tr>
<tr>
<td>Cannula site</td>
</tr>
<tr>
<td>CNS</td>
</tr>
<tr>
<td>Cardiovascular</td>
</tr>
<tr>
<td>Respiratory</td>
</tr>
<tr>
<td>Musculoskeletal</td>
</tr>
<tr>
<td>Gastrointestinal</td>
</tr>
<tr>
<td>Dermatological</td>
</tr>
</tbody>
</table>

**Anaphylaxis:** Cease the infusion immediately and call a Rapid Response if ONE or ALL of the criteria for anaphylaxis in Table 3 are met\(^6\).

### Table 3

<table>
<thead>
<tr>
<th>Anaphylaxis Criteria</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sudden onset and rapid progression of symptoms</td>
<td>Maintain airway patency</td>
</tr>
<tr>
<td>Life threatening Airway and/or Breathing and/or Circulation problems are present</td>
<td>If stridor present IM Adrenalin 0.5mg every 3-5 minutes (to a total of 2mg)</td>
</tr>
<tr>
<td>Life threatening Airway and/or Breathing and/or Circulation problems are present</td>
<td>Assist ventilation if required</td>
</tr>
<tr>
<td>Life threatening Airway and/or Breathing and/or Circulation problems are present</td>
<td>Apply (O_2) to maintain (SpO_2 &gt; 95%)</td>
</tr>
<tr>
<td>Life threatening Airway and/or Breathing and/or Circulation problems are present</td>
<td>If wheeze present give salbutamol 6-12 puffs of 100mcg dose MDI + spacer</td>
</tr>
<tr>
<td>Skin and/or mucosal changes (flushing, urticarial, angioedema)</td>
<td>Monitor vital signs 5 minutely</td>
</tr>
<tr>
<td>Skin and/or mucosal changes (flushing, urticarial, angioedema)</td>
<td>Commence Basic Life Support if indicated</td>
</tr>
<tr>
<td>Skin and/or mucosal changes (flushing, urticarial, angioedema)</td>
<td>If heart rate greater than 100bpm or systolic BP &lt; 90mmHg or capillary refill time &gt; 3 seconds give IV 0.9% sodium chloride 1000mL bolus</td>
</tr>
</tbody>
</table>

NSW Rural Adult Emergency Clinical Guidelines GL2016_012
4.0 **Required Knowledge and Assessment to Perform this Procedure**
Staff are required to complete the NNSW LHD – Medication Learning Activity Package. This education is a once only requirement. Staff should keep evidence of their competency in IV medication administration.

5.0 **Monitoring and Evaluation**
Facility site managers have the responsibility of implementing and monitoring the iron administration procedure.

Adverse drug reactions or suspected drug reactions from IV iron and any medication errors must be reported through IIMS. Incidents related to iron infusions are to be reviewed by the relevant Drug and Therapeutics Committee.

Any Severity Assessment Code (SAC) 1 or 2 incidents must also be reported to the Local Health District Drug and Therapeutics Committee.

The procedure will be reviewed in five years following implementation or as current NSW health standards, policy directives and drug handbooks are updated directing a change for best practice.

6.0 **Definitions**
Must: Indicates a mandatory action requiring compliance by staff at public health facilities, in accordance with a legislative requirement and/or a NSW Health policy or directive.

Should: Indicates a recommended action that should be followed, unless there is a sound reason for taking a different course of action.

Anaphylaxis: a rapidly progressing, potentially life threatening allergic reaction that often involves more than one body system (skin, gastrointestinal, cardiovascular and respiratory).

Contraindication: a condition which makes a particular treatment or procedure potentially inadvisable.

7.0 **References**
1. Aspen Pharma (AU). Ferric Carboxymaltose (Ferinject) Product Information [Internet]. Melbourne; 2016 July [cited 2016 September 7].
Appendices

Appendix 1: General Guide to Iron and Iron Deficiency
Appendix 2: BloodSafe Intravenous (IV) Iron Infusion
Appendix 3: Ferinject Patient Leaflet
Appendix 1: **General Guide to Iron and Iron Deficiency**

*A General Guide to Iron and Iron Deficiency*

**Information for Patients, Families and Carers**

**Why do we need iron?**

Iron is used by all of our cells. It is important for our immune system, mental function, muscle strength, and energy. Iron is also used to make red blood cells to carry oxygen around our body.

We get the iron we need from the food we eat. It is stored in our body, but we lose small amounts every day.

**Iron deficiency**

Not having enough iron, iron deficiency, is most common in people who do not have enough iron in the food they eat. Sometimes you eat enough food with iron in it, but your body can’t get the iron properly or you may lose more iron than you can replace.

Children, teenagers and women of child bearing age are most likely to have low iron. But it is also found in people with some medical problems.

In older people, low iron may be a sign of hidden bleeding, especially from the stomach or bowel, and could mean there is another medical problem causing it.

**Iron Deficiency Anaemia (IDA)**

If low iron isn’t treated, over time all of the stored iron will be used. This will lead to Iron Deficiency Anaemia (IDA).

This is a serious problem as it means you do not have enough iron to make new red blood cells. If not treated, Iron Deficiency Anaemia can be life threatening.

**How will I know if I am low in iron?**

The symptoms are mild at the start, but will become more serious if not treated.

These can include:

- Feeling weak, tired, and lacking energy
- Feeling short of breath, dizzy, or an irregular heartbeat
- Not able to exercise as much
- Losing interest in sexual activities
- Getting more infections than normal
- Finding it hard to remember things or to concentrate
- Not performing as well at work or at school
- Feeling irritable or children having problems with their behaviour

**How do I find out if I have a problem with my iron?**

Low iron is found with a blood test and a review of your medical history as well as your diet and any medications you are taking. This can be done by your GP. This can also be done if you are in hospital or need to have an operation.

If you are low in iron, it is very important that the exact cause is found. You may need to see a medical specialist, such as a gastroenterologist or haematologist, and have further tests.
How do I improve my iron levels?
The treatment of low iron will depend on how low your iron is, and what has caused it. If you have low iron, you will need to test your levels regularly - your doctor will tell you how often. Keeping the right amount is a balancing act - too little can interfere with your vital functions and too much can lead to other health problems.

Iron and food
There are two types of iron in food:
- Haem iron from animals, such as red meat, chicken, pork and fish
- Non-haem iron from plants, like green leafy vegetables, nuts and whole grain cereals.

Haem iron is better absorbed by our bodies than non-haem iron. You can increase the iron you get from food by also eating food with lots of vitamin C, like citrus fruits, berries, tomatoes and broccoli.

Oral iron supplements
If you have low iron, it is very difficult to increase it only by diet. You can get iron replacement in tablet, capsule or liquid form. Choosing which one is right for you can be hard and it is important to get advice because some brands do not have enough iron to treat low iron.

Iron tablets will make your faeces darken or turn greenish-black, which is normal. Some people may get stomach upsets when they first start taking iron. This will get better over time. If it doesn’t, you should see your doctor to talk about trying another type of iron.

Intravenous (IV) iron
Your doctor may suggest this if you have very little iron or you need to fill up your iron stores very quickly. The iron will be injected directly into a vein. You will need to go to a hospital, outpatient clinic or medical centre for this treatment.

There are several types of IV iron, some are given quickly (5 to 20 minutes), and others are given over several hours.

Afterwards, you should be able to carry on with your normal activities. If you also take oral iron (e.g. iron tablets), you should not need to keep taking them.

IV iron can have side effects. The most common are mild and can happen up to 3 days after treatment. These are nausea, headache, dizziness, or a skin reaction where you have the IV cannula.

There is a small risk of skin staining (brown discolouration), which can be long lasting or permanent, if any of the iron leaks around the IV cannula. Tell the doctor or nurse straight away if you notice discomfort, burning, redness or swelling during the treatment.

Allergic reactions are very rare, but can be serious and even life threatening.

When you have IV iron you will be carefully monitored. You must tell staff if you feel different during your treatment. You will get information on what to look out for when you go home.

For more information on iron deficiency, go to:
- Gastroenterological Society Australia (GESA)
  www.gesa.org.au
- Australian Red Cross Blood Service information for patients
  www.mytransfusion.com.au
- SA Health iron disorders and iron therapy
  www.sahealth.sa.gov.au

Disclaimer
This fact sheet is for your educational purposes only. It should not be used to guide and/or determine actual treatment choices or decisions. Any such decisions should be made in conjunction with advice from your treating doctor or other health professionals.

About Blood Watch
Blood Watch is a program of the Clinical Excellence Commission. It promotes medical and surgical strategies to manage both donated blood resources and the patient’s own blood, and to improve individual patient outcomes.

For further information on the Blood Watch program, please visit

Appendix 2: **BloodSafe Intravenous (IV) Iron Infusion**

**Intravenous (IV) iron infusions**

**Information for patients, families and carers**

This leaflet answers some common questions about IV iron infusions. It does not contain all available information and does not take the place of talking to your doctor about your case.

**Why is iron important?**

Our bodies need iron. Iron is used to make haemoglobin – the part of our red blood cells that carries oxygen around our body. It is also important for muscle strength, energy and good mental function. If your iron levels are low this may make you feel tired and not able to do normal daily activities. As the amount of iron in the body falls even lower, the haemoglobin level drops below normal. This is known as iron deficiency anaemia.

**Why might I need IV iron?**

The most common way to treat iron deficiency is to take iron by mouth as a tablet or liquid. This works well for most people and is usually tried first. Some people may need iron to be given straight into the body through a vein. This is called an Intravenous (IV) iron infusion. The iron is given through a needle and dripped (‘infused’) into your vein. Sometimes 2 iron infusions (given at least 1 week apart) are needed to fully top up iron stores. The infusion is made up of iron, not blood.

IV iron might be needed if you:

- Are not able to take iron tablets / liquid
- Are not responding to iron tablets / liquid or not absorbing them
- Need to get your iron levels up quickly (eg. before major surgery, late in pregnancy or to avoid blood transfusion)
- If you have chronic kidney disease or chronic heart failure

Your doctor should explain why you need IV iron and the other options.

**Are there any side effects with IV iron?**

Generally, when side effects do occur, they are mild and settle down on their own. The most common side effects are temporary and include:

- Headache, feeling sick or vomiting, muscle or joint pain
- Changes in taste (eg. metallic)
- Changes to blood pressure or pulse

**Skin staining** (brown discoloration) may occur due to leakage of iron into the tissues around the needle (drip) site. **This is not common but the stain can be long lasting or permanent.** Inform the doctor or nurse straight away of any discomfort, burning, redness or swelling at the needle (drip) site.

Although very uncommon, some people may have a serious allergic reaction. In rare cases this can be life threatening. You will be closely monitored while IV iron is given, and for 30 minutes after.

Sometimes side effects (eg. headache, muscle or joint pain) can start 1 to 2 days later. Mostly they will settle down by themselves over the next couple of days. If they worry you or interfere with your daily activities contact your doctor or infusion centre for advice. If you have chest pain, trouble breathing, dizziness or neck / mouth swelling, please seek urgent medical attention / call an ambulance (000).
Intravenous (IV) Iron Infusions (continued)

What to tell your Doctor
You need to tell your doctor and the centre doing your iron infusion if you:
- Are pregnant / trying to get pregnant. IV iron should be avoided in the first trimester.
- Have a history of asthma, eczema or other allergies.
- Have had a reaction to any type of iron injection or infusion in the past.
- Have a history of high iron levels, haemochromatosis or liver problems.
- Are on any medications (including herbal and over the counter medicines).
- Have (or may have) an infection at the moment.

What to ask your Doctor
You may wish to talk with your doctor about the following:
- Why do I need IV iron?
- What are the other options?
- About how long will the iron infusion take?
- How many iron infusions will I need to get enough iron?
- (If you are taking iron tablets at the moment), When do I stop taking iron tablets and will I need to use them again?
- How long will it take for the iron to work?
- Any questions about any side effects that may worry you (a general list is provided on the other side).

What happens on the day?
There is nothing special that you need to do to get ready for the day of iron infusion (eg. you don’t need to fast). Unless you have an unexpected reaction, you will be able to drive home and do your normal activities. Before leaving the infusion centre, ensure that you have:
- the number to contact if you have any worries or questions
- the dates for any follow up tests and/or appointments

My IV Iron Infusion Details:
Name of iron: ........................................................................................................................................
Infusion date(s) / time(s): ....................................................................................................................
............................................................................................................................................................
Location: ........................................................................................................................................
Contact phone number: .......................................................................................................................
Date(s) of blood test or review after IV iron: ....................................................................................
Notes: ..................................................................................................................................................
............................................................................................................................................................

For more information:

Talk to your doctor / infusion centre
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*SA Health Safety and Quality Community Advisory Group (SQCAQ)

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Appendix 3: Ferinject Patient Leaflet

What happens after your treatment with Ferinject®?

- You can usually go straight home after your Ferinject® injection/infusion has finished.
- If your iron levels have improved adequately, then no further injection of iron will be given. However, if you still need ‘topping’ up a further dose may be required.
- You may require another injection of Ferinject® based on your body’s iron needs.
- Your doctor or nurse will continue to check that the amount of iron in your body stays within the right range for you.

When will I feel better?

The time taken for your haemoglobin levels to improve is different for everyone. It will depend on how iron deficient and anaemic you are and how efficient your bone marrow is at making new red blood cells.

Appointment date tracker

You might find the table below useful to make a note of your next appointment and any questions you may have or points you would like to discuss with your doctor or nurse.

<table>
<thead>
<tr>
<th>Next appt.</th>
<th>Notes/Points to discuss</th>
</tr>
</thead>
<tbody>
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<td></td>
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</tbody>
</table>

Use the space below to note down emergency numbers and contact details for your nurse and/or doctor so you can get help quickly if you need it. If at any time you feel unsure about anything or need information or advice, contact your doctor, nurse or pharmacist.

| General Practitioner:          |
|                              |
| Telephone:                    |
|                              |
| Specialist:                   |
| Telephone:                    |
| Nurse:                        |
| Telephone:                    |
| Pharmacist:                   |
| Telephone:                    |

Further Information

For further information on Ferinject® please speak to your healthcare professional, who may contact Vifor Pharma on 1800 202 674

Always read the Ferinject® CMI leaflet provided.

Vifor Pharma
Level 8, 80 Duxton Street
Southbank Victoria 3006
www.viforpharma.com.au

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Why have you been given this leaflet?

You have been given this leaflet because you have been found to have low levels of iron in your body and your doctor believes that Ferinject® (ferric carboxymaltose) is an appropriate treatment for you.

This leaflet explains what Ferinject® is, how it is used and what you can expect from your treatment. If you have any additional questions or concerns, please speak to your doctor or nurse.

Please note that this leaflet does not replace the Consumer Medicine Information (CMI) available from www.tga.gov.au/australian-register-therapeutic-goods

Iron is an essential element required for the oxygen-carrying capacity of haemoglobin in red blood cells and muscle tissue.

Iron is also involved in many other functions necessary for maintenance of life in the human body.

If you don’t have enough iron, your body can’t make enough healthy oxygen-carrying red blood cells.

A lack of red blood cells due to iron deficiency is known as iron deficiency anaemia.

Iron replacement therapy is used to replenish your body’s iron stores and treat iron deficiency anaemia.

All about Ferinject®

What is Ferinject®?

Ferinject® is an intravenous iron replacement treatment for patients who have low levels of iron in their body.

Ferinject® is not a blood product. Over time low levels of iron can lead to anaemia, where red blood cells are either smaller and/or fewer than normal.

What is Ferinject® used for?

Ferinject® is used to increase the amount of iron in your body. Increasing the iron in your body is intended to reverse anaemia, or prevent you from becoming anaemic. Your doctor has prescribed Ferinject® as they believe it is an appropriate treatment for you.

How does Ferinject® work?

Ferinject® contains iron in the form of tiny particles of iron with a sugar coating. This means that the iron is released steadily and is able to be taken up by appropriate storage sites and used in your body. Iron is required by the red blood cells in your body to make haemoglobin.

Haemoglobin is required to help carry oxygen and provide it to the tissues in your body.

What will your doctor want to know before you start treatment?

Your doctor will want to talk to you before you start treatment, as not all medicines are suitable for everyone. Before you are given Ferinject®, your doctor may ask you about the following:

- Your full medical history
- Whether you are taking any other medicines, including those that don’t need a prescription
- If you are pregnant or if you are planning to become pregnant.

Your treatment with Ferinject®

How will you receive your treatment?

Intravenous iron is injected into a vein in your arm through a needle. The procedure takes place in your doctor’s office or clinic. Your treatment time will be approximately 15 minutes.

Your doctor will discuss with you whether one or more visits are required to increase your iron level to the right range for you.

You will be treated with Ferinject® by your doctor or nurse in two possible ways:

- By undiluted injection, directly into a vein in your arm
- By diluted infusion, given directly into a vein in your arm

What possible side effects might you experience?

As with all medicines, Ferinject® can cause side effects, although not everyone gets them. The most common side effect you might experience from treatment with Ferinject® is a headache. Other common side effects include: dizziness, feeling sick, pain in your stomach, skin rash and skin reactions where your injection was given.

There is a low risk with all iron treatments given directly into your arm that you could experience a reaction known as an anaphylactoid reaction. This can cause symptoms such as swelling of the face, mouth and tongue as well as potentially causing difficulty breathing.

Your doctor or nurse who is treating you will monitor you for this and will provide treatment if required.

Your doctor will discuss possible side effects with you and will also monitor how you are feeling whilst your treatment is being given. Please tell your doctor or nurse if you feel unwell, or think you may be experiencing any side effects whilst you are being treated with Ferinject®.

Please note there is more information on possible side effects in the Ferinject® CMI, ask your healthcare professional for a copy.

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## 9.0 NNSW LHD Clinical Procedure Cover Sheet

| COVER SHEET |
| NNSW Local Health District  
| CLINICAL Policy Framework |

| Name Of Document | Iron Infusion Administration |
| Type of Document | Procedure |
| Document Number | NNSW-LHD-PRO-0450-18 |
| Superseded Document | NC-RCH-PRO-7556-15 Iron Infusion Administration (RC.15.002) and NNSW-TBY-MED-0056-16 Iron Polymaltose for Intravenous Administration in Adults |
| Sites/Services where compliance with this procedure is mandatory. | All Sites |

- PD2013_049 [Recognition and Management of Patients who are Clinically Deteriorating](#)
- PD2013_043 [Medication Handling in NSW Public Health Facilities](#)
- PD2016_058 [User Applied Labelling of Injectable Medicines, Fluids and Lines](#)
- GL2016_012 [Rural Adult Emergency Clinical Guidelines](#)

<p>| Risk Management | Avoiding the risk of interchangeable dosing and infusion rates between intravenous iron preparations. Minimizing the potential risks of anaphylactic type reactions, iron overload and para venous infiltration. |
| Current Risk Rating | L – Major / Rare |
| Targeted Risk Rating | U – Minor / Unlikely |
| Date Created | 30 July 2018 |
| Date of Publication | 28 December 2018 |
| Next Review Date | 28 December 2019 |
| Aboriginal Health Advisory Committee Registration Number | TBA |
| Author | Beverley Hiles, Richmond Blood and Blood Products CNC |
| Clinical Authority | NNSW LHD Drugs and Therapeutics Committee |</p>
<table>
<thead>
<tr>
<th>Management Authority</th>
<th>NNSW LHD Health Care Quality Committee</th>
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<tbody>
<tr>
<td>Executive Sponsor</td>
<td>NNSW LHD Director of Nursing, Midwifery and Aboriginal Health</td>
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<tr>
<td>Key Words</td>
<td>Iron deficiency, anaemia, iron infusion administration, iron dose calculation, intravenous iron prescription, iron polymaltose, iron sucrose, ferric carboxymaltose, anaphylaxis, adverse reactions, observations</td>
</tr>
<tr>
<td>Summary</td>
<td>Procedure to ensure safe administration of intravenous iron preparations to patients, maintaining compliance with National Safety and Quality Health Service Standards.</td>
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<tr>
<td>Date Approved for Electronic Distribution by NNSW LHD Chief Executive</td>
<td>28 December 2018</td>
</tr>
<tr>
<td>Signature NNSW LHD Chief Executive</td>
<td>Wayne Jones</td>
</tr>
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