PRESCRIBING AND ADMINISTRATION OF INTRAVENOUS IRON PREPARATIONS IN ACU – ST GEORGE HOSPITAL

This drug information business rule is **NOT** a standing order.

Cross References (including NSW Health/ SESLHD policy directives)	Medication Handling in NSW Public Health Facilities NSW Health PD2013_043 Medications – Intravenous Medications, Therapy and Additives SGSHHS CLIN115 Ambulatory Care Unit - Referrals and Process For Administration Of Medications And Treatments SGSHHS CLIN166 SGH Renal Services Iron in CKD Protocol http://stgrenal.org.au/sites/default/files/upload/ACU/IV_Iron_in_CKD_Protocol_Ferrinject_Ferrosig_FINAL_2015.pdf
1. Employees this Applies to and Accreditation Requirements	Iron Polymaltose and Ferric carboxymaltose should only be administered by Registered Nurses (RNs) who have read this clinical business rule (ClBR) and have a clear understanding of the correct administration procedure. This ClBR **does not apply** in the dialysis units; refer to specialty based ClBR located on the Nephrology page for patients on haemodialysis or peritoneal dialysis.
2. Risk Rating	Medium
3. Description/ Presentation	• Intravenous iron infusion may be used to augment haemoglobin levels in patients with identified iron deficiency anaemia. While oral iron remains the cornerstone of Iron Deficiency Anaemia (IDA) therapy, some patients require intravenous (IV) iron therapy. Iron polymaltose (Ferrum H® [Aspen Pharmacare], Ferrosig® [Sigma Pharmaceuticals]) Ferric carboxymaltose (Ferinject® [Vifor Phama] and iron sucrose (Venofer® [Aspen Pharmacare]) are the parenteral iron formulations currently available in Australia. A “total-dose” infusion (where iron stores can be repleted in a single treatment episode) can be administered only with iron polymaltose • IV administration of iron and carbohydrate complexes may result in fatal anaphylactoid reactions, consequently it is only suitable for IV administration in a hospital setting Anaphylactoid reactions, characterised by sudden onset of respiratory difficulties, tachycardia and hypotension, occur most frequently within the first minutes of administration • If any signs or symptoms of reaction develop, infusion is to be stopped immediately and medical assistance called for. • Duration of administration must be considered by Medical officer when prescribing particular formulary of Intravenous Iron, with rapid infusion capabilities being favourable in the ACU setting.
4. Indications	IV iron infusion may be indicated in the treatment of iron deficiency anaemia if: • Oral therapy is contraindicated • Enteric absorption of iron is defective • Patient non-compliance or persistent gastrointestinal intolerance makes oral

	therapy impractical. • Chronic Kidney Disease or End Stage Kidney Disease • Worsening of iron deficiency or suboptimal response to ESAs despite oral iron supplementation
5. Contraindications and/or Precautions	**Contraindications:** • Pregnancy (first trimester) • Anaemia not caused by simple iron deficiency (e.g. haemolytic anaemia, megaloblastic anaemia caused by vitamin B12 deficiency, disturbances in erythropoiesis, hypoplasia of the • marrow) • Hypersensitivity to iron III hydroxide polymaltose complex • Iron overload (e.g. haemochromatosis, haemosiderosis) • Active infections • Decompensated hepatic cirrhosis • Administration via an AV fistula/graft **Precautions:** • Low iron binding capacity • Folate deficiency • Allergy • Cardiovascular disease • Hepatic disease • Inflammatory diseases including rheumatoid arthritis, ankylosing spondylitis, and lupus erythematosus • Chronic polyarthritis • Bronchial asthma • Excess dose • Pregnancy (2nd, 3rd trimester) • Osler-Rendu-Weber syndrome • Extravasation may result in staining of the tissues

6. Iron Preparations

Intravenous Iron is available in both Iron Carboxymaltose and Iron Polymaltose formularies. Consideration must be made by Medical Officer regarding previous administration and safety profile as to which formulary is prescribed.

6.1 Pre Infusion

- Adrenaline, antihistamines and cardiovascular resuscitation equipment should be readily available
- Inform patient of procedure
- Establish intravenous access. Note: In CKD patients an AV fistula/graft or the limb containing the AV fistula/graft must not be used to establish intravenous access.
- Patient is to be placed in a bed for the initial infusion (iron polymaltose only). Subsequent infusions can be administered in a chair.
- In the event of a PACE call, the patient is under the care of the General Medical Unit (GMU) consultant – if unavailable, cover is by the referring team

6.2 Iron Carboxymaltose (Ferinject)

- Administered by intravenous injection using undiluted solution up to a maximum single dose of 1,000 mg iron (up to a maximum of 20 mg iron/kg body weight).
- For doses greater than 200 and up to 500 mg iron, Ferinject should be administered at a rate of 100 mg iron/min.
- For doses greater than 500 and up to 1,000 mg iron, Ferinject should be diluted in sodium chloride 0.9% (500 mg iron/100 ml sodium chloride 0.9% and concentrations should be no less than 2mg iron/mL) and administered over 30 minutes for first dose and 15 minutes for subsequent dose/s. Do not administer more than 1,000 mg of iron per week.

6.3 Iron Polymaltose

- CKD patients are infused 500-1000mg in a single infusion or alternatively 250mg of iron weekly for 4 doses.
- The infusion should not be mixed with any other substances
- Dose to be calculated by the treating medical officer (MO)

First dose or patient with previous adverse reaction/s to iron:

- Dilute dose of Iron Polymaltose (Ferrosig) into 500 mls 0.9% normal saline
- Commence a test dose of 7.5 mls, running at 15 mls/hr, for the first 30 minutes via an infusion control device set rate to 15 and volume 7.5
- In the absence of any adverse reaction, increase pump speed to 120 mls/hr
- Time required for infusion = approximately 4 hours 20 mins

Fast track iron dose (Iron Polymaltose):

- Suitable for all patients who have had a previous iron infusion without any adverse reactions
- Dilute 1 to 2.5g of Iron Polymaltose (Ferrosig) into 250 mls 0.9% normal saline (e.g. 1.5g Ferrosig in 250 mls N/S = 280 mls)
- Commence a test dose of 10 mls, running at 40 mls/hr, for the first 15 minutes via an infusion control device set rate to 40 and volume to 10
- In the absence of any adverse reaction, increase pump speed to 120 mls/hr
- E.g.: time required for an infusion of 280 mls = 2 hrs 30 mins

6.4 Nursing Care

- Observations:
  Baseline observations, including blood pressure, pulse and temperature are to be recorded pre-infusion for both Ferinject and Ferrosig.
- **Ferinject dose:** Vital signs: blood pressure, pulse, respiration rate and temperature must be monitored on admission, 5 minutes after commencement of infusion and at the end of the infusion. Patient must be observed for 30 minutes after the first infusion. Activate a PACE call if observations breach PACE parameters.
- **First dose**: 15 minute observations for the first 30 minutes of infusion
- **Fast-track dose:** repeat observations after first 15 minutes
- Hourly observations until the completion of infusion.
- Oral Iron (Fe, ferrous sulphate) – oral iron therapy should not be commenced until at least one week after the last infusion

- Please inform referring medical team of any adverse reactions – if severity warrants, issue PACE call as per section 6.1 above

6.5 Prescribing and Documentation

- Referrals to ACU for treatment require a valid referral form. The referral form should expire in line with the next planned patient medical review date. At a minimum patients treated by ACU are required to be medically reviewed annually and therefore all referrals will automatically expire after 365 days (maximum length of referrals accepted).
- All referrals are made using the approved form 'Referral - Ambulatory Care Unit' (S0638)
- All referrals from a medical specialist or inpatient medical teams must be made using this approved referral form and clearly state the patient's name, treatment required, medication name, dose, route, frequency, time and whether it is the first iron infusion.
- Medications are to be ordered on the Community Medication Authorisation and Record (S0168).

6.6 Adverse Effects

Adverse effects may be delayed 1-2 days post infusion.

Immediate Adverse Effects

Anaphylaxis

- Bronchospasm with dyspnoea
- Faintness, syncope, tachycardia, hypotension, circulatory collapse
- Loss of consciousness

Central nervous System

- Headache, dizziness

Gastrointestinal

- Nausea, vomiting (may indicate excessive infusion rate)

Musculoskeletal

- Joint and muscle pain

Dermatological

- Rash, urticaria

General

- Flushing, sweating

Delayed Adverse Effects

Central nervous System

- Dizziness
- Musculoskeletal
- Arthralgia, myalgia, sensation of stiffening of arms, legs or face

Haematological

- Generalised lymphadenopathy

Dermatological

- Angioneurotic oedema, rash, urticaria

General

- Chills, fever, chest and back pain

Treatment of anaphylaxis:

1. Lie patient flat and raise their feet
2. Administer 100 % oxygen via mask
3. PACE Tier 2 call
4. Administer fluid including gelofusine IV to maintain systolic BP to 100 mg Hg
5. Medical Officer to give adrenaline (1:1000) immediately 0.5 ml subcutaneous (repeat at 5 to 15 minute intervals if necessary) followed by hydrocortisone 200 mg IV and diphenhydramine 50 mg IV
6. Commence CPR in the event of a respiratory or cardiac arrest

7. Keywords	Iron Infusion, Ambulatory Care,
8. Functional Group	Renal, Ambulatory Care
9. External References	VIC Health, Guiding principles for the development of intravenous (IV) iron infusion practice http://www.health.vic.gov.au/bloodmatters/management/guiding_principles_iron_infusion.htm
10. Consumer Advisory Group (CAG) approval of patient information brochure (or related material)	N/A
11. Implementation and Evaluation Plan	Available on intranet Staff Inservices Review of IIMS
12. Knowledge Evaluation	Q1: What are the indications for iron deficiency treatment with intravenous iron? A: Oral therapy is contraindicated, Enteric absorption is defective, Gastrointestinal intolerance makes therapy impractical, Chronic kidney Disease or End Stage Kidney Disease, Worsening iron deficiency or suboptimal response to oral supplementation. Q:What are 3 possible contra-indications for administering Iron Polymaltose? A: Pregnancy 1st Trimester, Hypersensitivity to iron polymaltose and/or Active Infection Q. If the patient develops any signs and symptoms of acute infusion reaction what should you do? A. Stop the infusion immediately and call for a medical review – call PACE as per hospital protocol (refer to section 6.1 above)

13. Who is Responsible	Nursing Co-director Aged & Extended Care / Medicine Medical Director Aged & Extended Care/ Medicine

Approval for Iron Preparations in ACU – Prescribing and Administration	
***Nursing/Midwifery Co-Director**	Name/position: E. Child, A/NCD AEC Date: 09.06.15
***Medical Co-Director**	Name /position: P. Smerdley Date: 18.06.15
***Drug and Therapeutics Committee (SGH)**	Chairperson's Name: A/Prof. Winston Liauw Date: 17.09.2015
Executive Sponsor	Name/Position: Nicole Wedell, NCD AEC Date: 22.06.15
Contributors to ClBR Development E.g. CNC, Medical Officers (names and position title/specialty)	NUM – ACU CNC Renal CNC Peritoneal Dialysis

Revision and Approval History

Date	Revision number	Author (Position)	Revision due
Feb 2012	1	CNC Ambulatory Care and CNC Nephrology	Feb 2015
Sept 2015	2	CNC Ambulatory Care	Sept 2018

General Manager Ratification	
Name: Leisa Rathborne, SGH	Date 16.10.2015