SOUTHAMPTON UNIVERSITY HOSPITALS NHS TRUST

APPROVED **GUIDELINES**

PROFORMA

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Author: (Name & Position)	Karen Brackley (Consultant Obstetrician)
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Responsible Officer: (Name & Position)	Matthew Coleman Consultant
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Signature of Chairman of Validation Committee: Matthew Coleman
Print Name: Matthew Coleman
Post Held: Chairman CGSG
Date 08/11/2007

ANTENATAL AND POSTNATAL USE OF PARENTERAL IRON (IV IRON SUCROSE, VENOFER®)

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ANTENATAL AND POSTNATAL USE OF PARENTERAL IRON (IV IRON SUCROSE, VENOFER®)

1. INTRODUCTION

Iron sucrose complex (Venofer) has been shown to be safe and is widely used in anaemic patients with renal disease. Fewer studies have evaluated its use in antenatal and postnatal settings. Consistent with data following perioperative anaemia, most comparison studies have shown a faster increase in the haematological parameters (haemoglobin, haematocrit, ferritin, reticulocyte count) with IV iron sucrose (+/- erythropoietin) compared to oral iron. A recent randomised controlled trial in women with postpartum anaemia (<9g/dl) confirmed significantly increased haemoglobin rise at 5 and 14 days (2g/week) with intravenous therapy compared to oral iron therapy with no significant difference by 40 days (Bhandal and Russell 2006). However, potential improvements in maternal and fetal wellbeing have not been investigated so far. The use of parenteral iron should be considered against the risks and benefits of other forms of therapy for anaemia. The use of iron sucrose may be considered in situations where oral iron therapy and/or blood transfusion are not favoured or thought inappropriate. Its use is likely to increase due to future restriction on blood availability.

2. SOURCES OF EVIDENCE

Information has been obtained after literature search on Medline, EMBASE, Pubmed and hand searching through relevant references.

3. INDICATIONS

The decision to give IV iron sucrose rather than a blood transfusion or oral iron supplements has to be made on an individual basis and at a senior obstetrician level, both in the antenatal and postnatal period.

Potential indications include:

- Persistent iron deficiency anaemia due to oral iron intolerance/ non-compliance/ treatment failure
- Symptomatic postpartum anaemia when a more rapid increase in haematological parameters is desired eg following postpartum haemorrhage with haemoglobin in approximate range 70-80 g/l and mild symptoms of low haemoglobin (such as fatigue or dizziness present).
- Blood transfusion declined e.g. Jehovah's Witness

4. SAFETY

Whereas the previously available parenteral iron, such as iron-dextran or iron-gluconate have relatively higher risks of allergic reactions, iron sucrose has low allergenicity and is very well tolerated. Moreover, iron sucrose is incorporated into the bone marrow for erythropoiesis faster than other parenteral preparations of iron and is therefore thought more effective. IV iron sucrose (Venofer, Syner-Med (PP) Ltd, Surrey, UK) is now licensed for use during the second and third trimesters of pregnancy. It remains contraindicated in the first trimester, because of lack of safety data especially fetal effect. None of the studies assessed safety during lactation although

theoretically the risk is small, as the unmetabolised sucrose complex does not cross over to breast milk.

Side effects are reported in 0.5 –1.5% of patients.

Common: metallic taste
Uncommon: headaches, dizziness, hypotension, tachycardia and palpitations, bronchospasm, dyspnoea, nausea and vomiting, abdominal pain, diarrhoea, pruritis, urticaria, skin rash, muscle cramps, myalgia.
Very rare: anaphylactoid reactions. There have been **NO** incidence s of true anaphylaxis with Venofer.

5. PATIENT INFORMATION AND CONSENT

Iron sucrose should only be given after informed consent. The indication, side effects, mode and frequency of delivery of iron sucrose should be discussed with the mother before commencement of treatment and clear documentation in the notes is necessary. Written consent is not required. A patient information leaflet available on the intranet should be given.

6. PROCEDURE FOR ORDERING IRON SUCROSE (VENOFER®)

Iron sucrose should only be used after consultation with a senior obstetrician .
Iron sucrose is available as a stock item on Burley ward and should be prescribed on a drug chart. If stocks run low, supplies can be ordered via PAH pharmacist (Bleep 9038) or via main dispensary, Southampton General Hospital.

7. DOSE

The total amount of iron sucrose required can be calculated via the following formula:

Total dose for women over 35kgs over treatment duration (2-6 weeks) = Weight, kg (pre-pregnancy) x (Target Haemoglobin – Actual Haemoglobin, g/L) x 0.24 (correction factor) + 500mg (rounded up to the nearest multiple of 100mg). The total dose should be divided into the number of treatments needed over the treatment period

In practice the dose required depends on multiple factors including the available iron stores and should be titrated against haemoglobin response in the individual woman.

Recommended Dosage: 100mg of IV iron sucrose (1 ampoule of iron sucrose) not more than 3 times per week. A higher dosage of 200mg, 3 times per week may be used if rapid response is required eg after a postpartum haemorrhage. A minimum 24-hour interval should separate each dose given. If iron sucrose is given in the first week postpartum, commence oral iron supplements the following week rather than readmitting for repeat IV doses, unless the woman still has troublesome symptoms of anaemia. Use appendix 1 proforma for prescription and documentation of doses and haemoglobin increase. This form should be filed in the hospital notes.

8. ADMINISTRATION

Iron sucrose should *only* be administered *intravenously*. A blue or green cannula can be used to reduce subsequent venous access problems. **Prescribe on SUHT iron sucrose prescription form.**

Intravenous drip infusion (preferred route):

100mg dose: One 5 ml ampoule (100mg) is diluted in 100ml of 0.9% normal saline. The first 25mg (25ml) should be given as a test dose over 15 minutes (100mls/hour). If no adverse reactions occur during this time, the rest of the solution can be given at a rate of 200ml/hour (at this rate 75mls iron sucrose should take approximately 23 mins to give).

Subsequent doses: a test dose is not required and the infusion can be given at a rate of 200ml/hour throughout ie infusion of 100mls should take approximately 30 mins to give.

200mg dose (200mg in 100ml sodium chloride 0.9%): Two 5ml ampoules (100mg each) diluted in 100mls normal sodium chloride. The first time iron sucrose is given, infuse the first 12.5ml over 15 mins (50ml/hour). If no adverse reaction, give the remainder of the infusion at a rate of 100ml/hr. All subsequent infusions of 200mg dilute in 100mls and give over 60 mins.

Slow intravenous injections can also be given but this is not the recommended route.

Iron sucrose is a strongly alkaline solution and must never be administered by subcutaneous or intramuscular route. Paravenous leakage must be avoided because leakage of iron sucrose at the injection site may lead to pain, inflammation, tissue necrosis, sterile abscess, and brown discoloration.

8.1 Clinical areas for administration: Iron sucrose can be administered on Burley, Labour ward or Day Assessment Unit as long as there are staff available for appropriate monitoring of the woman (see below). As with blood transfusion, administration overnight should be avoided. Details of women who receive iron sucrose should be kept in a specific book on Day Unit for future audits. It is important that the other clinical areas contact Day Unit so that cases are not missed from this book.

8.2 Personnel to administer: The test dose can be given by a doctor or IV trained midwife. The test dose is only necessary for the first dose although the company is likely to remove the requirement of the test dose in the future as severe reactions are so rare and there has never been a report of antibody formation

8.3 Monitoring during infusion: A set of observations (BP, pulse, temperature) should be taken before the start of the infusion, after 15 minutes and at the end of the infusion (use appendix 1). Similar clinical observations of the woman should occur in the first 15 minutes as when giving a blood transfusion i.e. looking for symptoms or signs of an adverse reaction. Fetal monitoring is not required during the infusion. Women can go home an hour after the infusion if all observations are stable.

In the same way as for the administration of blood or blood products or indeed any IV medicine, facilities for cardio-pulmonary resuscitation must be available when administering iron sucrose i.e. the location of the crash trolley should be known. In the event of exceptionally rare serious anaphylactic or allergic reaction, administration of iron sucrose should be stopped, medical assistance urgently requested (phone 2222 for on call obstetric emergency team).

Mild allergic reactions should be managed by stopping the administration of iron sucrose and giving chlorpheniramine 10mg slowly IV. The infusion could then be restarted at a slower rate and the woman observed closely. Chlorpheniramine should only be given if mild reactions such as itching do not abate.

8.4. Oral iron therapy. Iron sucrose should **not** be given concomitantly with oral iron preparations. Oral iron therapy should be started at least 5 days after the last injection of iron sucrose.

8.5 When to check Haemoglobin: A full blood count should be taken 24 hours after every 3rd dose to evaluate response (use appendix 1). An increase in haemoglobin concentration between 10-20 g/l per week is anticipated**.**

9. COST

Packaging and NHS price: Venofer, Syner-Med (PP) Ltd, Surrey, UK cost £8.50 per ampoule. There is currently no study on the cost effectiveness of parenteral iron treatment versus other forms of iron therapy.

10. CONTRAINDICATIONS

- Anaemia not attributable to iron deficiency (ie not confirmed by low ferritin)
- Iron overload or disturbances in utilisation of iron
- A history of hypersensitivity to parenteral iron preparations
- History of cirrhosis or hepatitis or the presence of serum transaminases at three times the upper limit
- Acute or chronic infection, because parenteral iron administration may exacerbate a bacterial or viral infection

Individual cases should be discussed with the appropriate Consultant obstetrician.

Patients with a history of asthma, eczema or other atopic allergy are more susceptible to experience allergic reactions and therefore require careful observation.

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APPENDIX 1

Use of VENOFER: file in main notes.

Please complete in full

Patient Sticker

CONSULTANT:

VENUE: Day Unit

Burley

Labour ward

INDICATION: Please tick

ANTENATAL ☐ Gestation: POSTNATAL ☐

Persistent iron deficiency anaemia ☐
Secondary to oral iron intolerance ☐
Secondary to non compliance with oral iron ☐
Secondary to treatment failure ☐
Symptomatic anaemia postpartum (Hb 70-80g/l) ☐
Blood transfusion declined e.g. Jehovah's Witness ☐
D/W which Consultant ? .....

SIDE EFFECTS AND MODE OF DELIVERY: PLEASE CIRCLE

Have you given the patient the information leaflet ? Yes/ No
If no, please give reason:.....

Stopped oral iron ? Yes/No Why not .....

Test Dose given by: MW SHO SpR Cons

Side Effects: please circle

Metallic taste
Headaches
Tachycardia and palpitations
Dizziness
Abdominal pain
Muscle cramps or pain
Bronchospasm and dyspnoea
Rash and pruritis
Nausea and vomiting
Hypotension
Diarrhoea

Observation Chart: Venofer Use

Patient Sticker

BP, pulse and temperature should be taken at start of infusion, after 15 minutes and at the end of the transfusion.

Date																						
Hrs																						
Mins																						
190																						
180																						
170																						
160																						
150																						
140																						
130																						
120																						
110																						
100																						
90																						
80																						
70																						
60																						
50																						
40																						
Temp																						
Resp																						

SOUTHAMPTON UNIVERSITY HOSPITALS NHS TRUST

Southampton NHS
University Hospitals NHS Trust

Day Case Venofer (Iron Sucrose) Prescription

Name:
Date Of Birth:
Hospital No:

Venofer indication: ..... Patient's Weight (Kg) .....

Dose: .....mg Frequency:.....

Number of doses to be given **(Delete as appropriate)**	Venofer to be given indefinitely at the above dose and frequency **(Delete as appropriate)**

NB Usual maximum dose/frequency is 200mg three times a week. Venofer is administered intravenously.

Signature (of doctor completing above) ..... Date.....

Date	Dose	Doctor's Signature:	Route of administration (delete as appropriate)	Nurse's Initials & date:	Pharm	**Hb (g/L)**	**Date blood for Hb taken**
	mg		Infusion / Bolus				
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References

1. Venofer SPC www.medicines.org.uk Date accessed: 29th March 2007
2. British National Formulary 52nd edition
3. Personal communication with Syner-Med Medicines Information 3rd April 2007

Written by Edward Horne, Pharmacist (Rheumatology and Dermatology) July 2007

Method of administration (when given as an intravenous infusion)

For higher doses used in haematology or for intravenous bolus administration for fluid restricted patients see separate protocols.

Dilute the required amount of Venofer in 100ml Sodium Chloride 0.9% solution (one 5ml Venofer amp contains 100mg of iron).

100mg dose (100mg in 100ml Sodium Chloride 0.9%)

The first time Venofer is administered give the first 25ml over 15 mins (set the pump at 100ml/hour for 15 mins) if no adverse reaction occurs give the remainder of the infusion at a rate of 200ml/hour (at this rate 75ml of Venofer solution should take approximately 23 mins to give).

All subsequent infusions, after the first dose, should be given at a rate of 200ml/hour (at this rate the infusion should take approximately 30mins to give).

200mg dose (200mg in 100ml Sodium Chloride 0.9%)

The first time Venofer is administered give the first 12.5ml over 15 mins (set the pump at 50ml/hour for 15 mins) if no adverse reaction occurs infuse the remainder of the infusion at a rate of 100ml/hour (at this rate 87.5ml of Venofer solution should take approximately 53 mins to give).

All subsequent infusions, after the first dose should be given at a rate of 100ml/hour (at this rate the infusion should take approximately 60 mins to give).