Department of Health Government of Nunavut	**Medical Directives and Delegation** **Community Health Nursing**		
TITLE:		**SECTION:**	**POLICY NUMBER:**
Adult Intravenous Iron Infusion for Community Health Centres		Pharmacy	09-023-00
EFFECTIVE DATE:	**REVIEW DUE:**	**REPLACES NUMBER:**	**NUMBER OF PAGES:**
August 2024	August 2027	Update (09-023-00)	9
APPLIES TO:			
Supervisors of Community Health Programs (SCHP), Community Health Nurses (CHN), Nurse Practitioners (NP), Physicians			

1. BACKGROUND:

The Department of Health (Health) is committed to providing Nunavummiut with treatment options in community that align with current research and best practices.

Intravenous iron is a viable treatment option for iron deficiency anemia. There are numerous indications where oral therapy is inadequate, and an intravenous route is required. In order to improve access to treatment, intravenous iron should be offered to clients within their own community if it is required.

This medical directive permits authorization to treat clients with intravenous iron in the Community Health Centre (CHC). The process for providing safe administration will also be outlined.

2. MEDICAL DIRECTIVE:

2.1. In order for a client to receive an intravenous iron infusion, a physician or nurse practitioner must complete the "Adult Intravenous Iron Infusion Protocol" (refer to **Appendix A)**. Both the treatment requirement along with at least one indication must be met.

2.2. This medical directive only applies to the following two preparations of intravenous (IV) iron:

- Iron Sucrose (Venofer®)
- Ferric Derisomaltose (Monoferric®)

It does not apply to iron dextran, which has an increased risk of anaphylaxis and has been discontinued in Canada.

3. IRON SUCROSE SAFETY PROFILE, CONTRAINDICATIONS AND ADVERSE EFFECTS:

3.1. Safety Profile:

- The risk of anaphylaxis with intravenous iron (when high-molecular weight iron dextran is excluded) is less than 1/200,000.

3.2. Contraindications, Precautions and Adverse Effects:

- Refer to **Appendix A**, which provides a comprehensive review on the contraindications, precautions and adverse effects along with information on the management of reactions and adverse effects.

3.3. Important Consideration:

- Although an infectious condition is not a contraindication to IV iron, it may be wise, in this

situation, to consider deferring the administration of IV iron if it is not urgently needed.

4. DEFINITIONS:

4.1. Hypersensitivity symptoms: Wheezing, dyspnea, hypotension, edema, angioedema, rash, pruritus.

5. PRINCIPLES

5.1. CHNs and SHPs are expected to practice within their own level of competence when administering Intravenous Iron and seek guidance from their supervisor, physician or NP as needed.

6. PROCEDURE:

6.1. The following laboratory tests are required prior to administration of IV iron:

- Complete blood count (CBC)
- Ferritin
- Transferrin saturation (TSAT)

Note: A test performed within the past month is acceptable.

6.2. IV Iron is available as follows in the Territory:

	Regional Centres (Iqaluit, Rankin, Cambridge Bay)	Community Health Centres	Retail Pharmacies
Iron Sucrose (Venofer®)	Yes	Yes, treatment code B	Yes
Ferric Derisomaltose (Monoferric®)	Yes	No*	Yes

*If Ferric Derisomaltose is required in the CHC, and if time allows, it should be ordered through the client's retail pharmacy. Otherwise, it may be requested from the Regional Pharmacy. The Protocol may be used as a prescription which is faxed to the retail pharmacy.

6.3. The Supervisor of Community Health Programs (SHP) or Community Health Nurse (CHN) must possess the knowledge, judgement, and skill to manage an anaphylactic reaction in order to be the most responsible nurse overseeing the iron infusion.

6.4. Prior to a SHP or CHN starting an IV iron infusion, they must ensure that the Protocol is fully complete.

6.5. Medications to treat an anaphylactic reaction should be readily available. Refer to **Appendix A.**

6.6. Test dosing is not recommended as a cautionary approach for anaphylaxis with iron sucrose or ferric derisomaltose as there is no evidence and it may provide false reassurance.

6.7. Vital signs (HR, BP, RR, SpO_2, Temp) are taken pre-infusion and than q15-30 minutes during the infusion and until 30 minutes post-infusion. Monitor closely during the first 10 minutes of infusion for a reaction.

6.8. The client is to be observed for signs and symptoms of hypersensitivity during the infusion and until 30 minutes after the end of the infusion.

6.9. In the event a hypersensitivity/anaphylactic reaction or intolerance occurs, stop the infusion immediately and notify the physician in community or regional on-call. Refer to Appendix 2 and 3 of the Adult Intravenous Iron Infusion Protocol.

6.10. Review **Appendix B: Intravenous Iron Patient Information Sheet** with the client.

7. DOCUMENTATION:

7.1. The SCHP and CHN must follow Documentation Standard Policy (06-008-00) and Administering or Dispensing Pharmaceuticals – Documentation Policy (09-006-00) when documenting in the clients' medical record.

8. RELATED POLICIES, PROTOCOLS AND LEGISLATION:

Community Health Nursing Manual:	06-008-00	Documentation Standard
Community Health Nursing Manual:	07-001-00	Community Health Nursing
Community Health Nursing Manual:	09-001-00	Documentation of Allergies
Community Health Nursing Manual:	09-002-00	RN Initiated Drug Therapy
Community Health Nursing Manual:	09-006-00	Administering or Dispensing Pharmaceuticals - Documentation

9. APPENDICES

APPENDIX A: Adult Intravenous Iron Infusion Protocol
APPENDIX B: Intravenous Iron Patient Information

10. REFERENCES:

1. Institut national d'excellence en santé et an services sociaux (INESSS) Intravenous Iron Therapy in Adult, April 2022, available at: https://www.inesss.qc.ca/en/themes/medicaments/medical-protocols-and-related-prescriptions/medical-protocols-and-related-prescriptions/translate-to-anglais-traitement-au-fer-intraveineux-chez-ladulte.html, accessed August 25, 2022.
2. Lim, Wendy, et al. (2019). Canadian Expert Consensus: Management of Hypersensitivity Reactions to Intravenous Iron in Adults. *Vax Sanguinis, 114*, 363-373.
3. Rampton, D., et al. (2014). Hypersensitivity Reaction to Intravenous Iron: Guidance for Risk Minimization and Management.
4. RxFiles (2021). Iron Management: Iron Deficiency Anemia. www.rxfiles.ca/RxFiles/uploads/documents/members/cht-anemia-iron-products.pdf.
5. The Ottawa Hospital Parenteral Drug Therapy Manual 42nd Edition (2021)

Approved By:	Date: August 19, 2024
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APPENDIX A : ADULT INTRAVENOUS IRON INFUSION PROTOCOL

Allergies:
☐ NKA
☐ Unobtainable
☐ _____

Patient Name: _____
(Last Name) (First Name)
DOB: _____ (DD/MM/YY) Age: _____
Gender: M / F / U NU MRN#: _____

Adult Intravenous Iron Infusion Protocol

Indication:

Person 18 years of age or older **with iron deficiency**, accompanied by anemia* and defined as at least one of the following (select one indication):

- ❑ Ferritin less than 30 mcg/L
- ❑ Ferritin less than 100 mcg/L (in the context of subacute or chronic inflammation or in perioperative settings)
- ❑ Ferritin less than 500 mcg/L and TSAT less than 30% (Stages 3, 4, 5 and 5D chronic kidney disease [including dialysis])
- ❑ Ferritin less than 100 mcg/L OR ferritin between 100 and 300 mcg/mL and TSAT less than 20% (heart failure with reduced ejection fraction [40% or less] and New York Heart Association [NYHA] of II or greater). In this situation, IV iron can be used at once.

Anemia defined as:	
Patient Population	**Hemoglobin (g/L)**
Men:	Less than 130
Non-pregnant women:	Less than 120
Pregnant women:	1st Trimester: Less than 110 2nd Trimester: Less than 105 3rd Trimester: Less than 105-110
Post-partum women:	Less than 100
Cancer patients:	Less than 100-110

**There is little evidence to support the correction of iron deficiency in the absence of anemia. Therefore, IV iron should preferably be reserved for the treatment of iron deficiency in the presence of anemia, except in cases of heart failure according to predefined criteria or preoperatively for high-bleeding-risk surgery.*

AND who might benefit from the use of intravenous iron because of one of the following (select at least one indication):

- ❑ Ineffectiveness of or intolerance to oral iron preparations
- ❑ Severe symptoms of anemia
- ❑ Anticipated inadequate absorption of oral iron (e.g., malabsorption syndrome, drugs administered via jejunostomy, and continuous tube feeding)
- ❑ Continuous blood loss (e.g., hereditary telangiectasia and active inflammatory bowel disease)
- ❑ Parenteral nutrition of an anticipated duration of more than 2 weeks
- ❑ Chronic hemodialysis
- ❑ Certain advanced cancers
- ❑ When an increase in hemoglobin (Hb) or iron repletion for maintaining Hb is required in any of the following situations, especially if a blood transfusion is not an option or could be problematic (select the situation that applies):
  - ❑ In anticipation of high-bleeding-risk surgery (elective or urgent)
  - ❑ Hb less than 100 g/L for newly diagnosed iron deficiency anemia after 34 weeks of pregnancy
  - ❑ In anticipation of a high-bleeding-risk elective c-section (placenta previa, placenta accreta spectrum disorders, or large uterine myomas)
  - ❑ In pregnancy, in the presence of a moderate to high bleeding risk

Contraindications:

- ❑ The patient does not have any contraindications to the use of the prescribed parenteral iron formulation (see Appendix 1).

Note: Ferric Derisomaltose (Monoferric®) is not approved for use in Pregnancy.

Pre-Infusion Checklist:

- ☑ Urine pregnancy test for women of childbearing age.
- ☑ Assess for active infection; if present, reschedule if possible, or contact the prescriber for direction.
- ☑ If temperature is above 38°C, contact the physician or nurse practitioner before proceeding with iron administration.

Monitoring:

- ☑ Vital signs (BP, HR, RR, Temp, SpO_2) pre-infusion, q15-30min during infusion and until 30 minutes post-infusion.
- ☑ Observe patient for signs and symptoms of hypersensitivity during and for at least 30 minutes after iron administration.
- ☑ Call MD/NP for any signs or symptoms of hypersensitivity.
- ☑ Stop iron infusion immediately if hypersensitivity or intolerance occurs.
- ☑ See Appendices for Information on IV Iron Preparations, Managing Infusion Reactions and Adverse Effects, and the Anaphylaxis Algorithm.

Hypersensitivity:
Wheezing, dyspnea, hypotension, edema, angioedema, rash and/or pruritus

Follow-up blood work:

- CBC, ferritin, TSAT 4 to 6 weeks after treatment completion.

Prescribed by:			
PHYSICIAN/NURSE PRACTITIONER PRINTED NAME	**PHYSICIAN/NURSE PRACTITIONER SIGNATURE**	**YYYY-MM-DD**	**HH:MM**
Transcribed by:			
NURSE PRINTED NAME	NURSE SIGNATURE	YYYY-MM-DD	HH:MM

OSADIRONSU

Allergies:
☐ NKA
☐ Unobtainable
☐ _____

Patient Name: _____
(Last Name) (First Name)
DOB: _____ (DD/MM/YY) Age: _____
Gender: M / F / U NU MRN#: _____

Adult Intravenous Iron Infusion Protocol

Iron Sucrose (Venofer®):

❑ Iron Sucrose 200 mg in 100 mL NS IV over 30 minutes*
❑ Iron Sucrose 300 mg in 250 mL NS IV over 2 hours*
**If a slower rate is desired, indicate the duration of administration: _____*

Repeat this dose every _____
For a total of _____ doses

(Minimum 48 hours between doses.
Usual total dose: 1000 mg)

Ferric Derisomaltose (Monoferric®):

Patient Weight: _____ kg

Simplified dosing table (used for patients with iron deficiency from causes other than renal):

Hemoglobin (g/L)	Total dose for weight less than 70 kg	Total dose for weight of 70 kg and over
100 and greater	1000 mg	1500 mg
Less than 100	1500 mg	2000 mg

Note: Maximum single dose up to **20 mg/kg** body weight (not to exceed 1500 mg).
Total dose often requires administration over two sessions.
- Patients weighing 50-74 kg may only receive 1000 mg for initial dose.
- Patients must be at least 75 kg for a single dose of 1500 mg.

❑ Ferric derisomaltose 500 mg in 100 mL NS IV over 1 hour*
❑ Ferric derisomaltose 1000 mg in 100 mL NS IV over 1 hour*
❑ Ferric derisomaltose 1500 mg in 100 mL NS IV over 1 hour*
**If a slower rate is desired, indicate the duration of administration: _____*

If the total dose could not be administered in one session, supplement with one dose of:
❑ 500 mg
❑ 1000 mg
After at least 7 days

(Usual total dose: 1000 to 2000 mg)

*A slower rate (less than 50% of the recommended rate) may be considered, depending on the patient's risk factors for reactions to IV iron (e.g., a history of allergic reaction to another IV iron or low body weight). In such case, or if the patient has a Fishbane reaction or isolated symptoms during administration, the next administration may be started immediately at the last reduced rate tolerated by the patient.

PRN Medication:

☑ Acetaminophen 500-1000 mg PO x 1 PRN
☑ DiphenhydrAMINE 25-50 mg PO/IV x 1 PRN
☑ DimenhyDRINATE 25-50 mg PO/IV x 1 PRN

Location of Treatment:

❑ Qikiqtani General Hospital/Medical Day Unit
❑ Rankin Inlet
❑ Community Health Centre: _____

Prescribed by:			
PHYSICIAN/NURSE PRACTITIONER PRINTED NAME	PHYSICIAN/NURSE PRACTITIONER SIGNATURE	YYYY-MM-DD	HH:MM
Transcribed by:			
NURSE PRINTED NAME	NURSE SIGNATURE	YYYY-MM-DD	HH:MM

Appendix 1: General Information on IV Iron Preparations

(Note: Not all inclusive; consult additional references for more details)

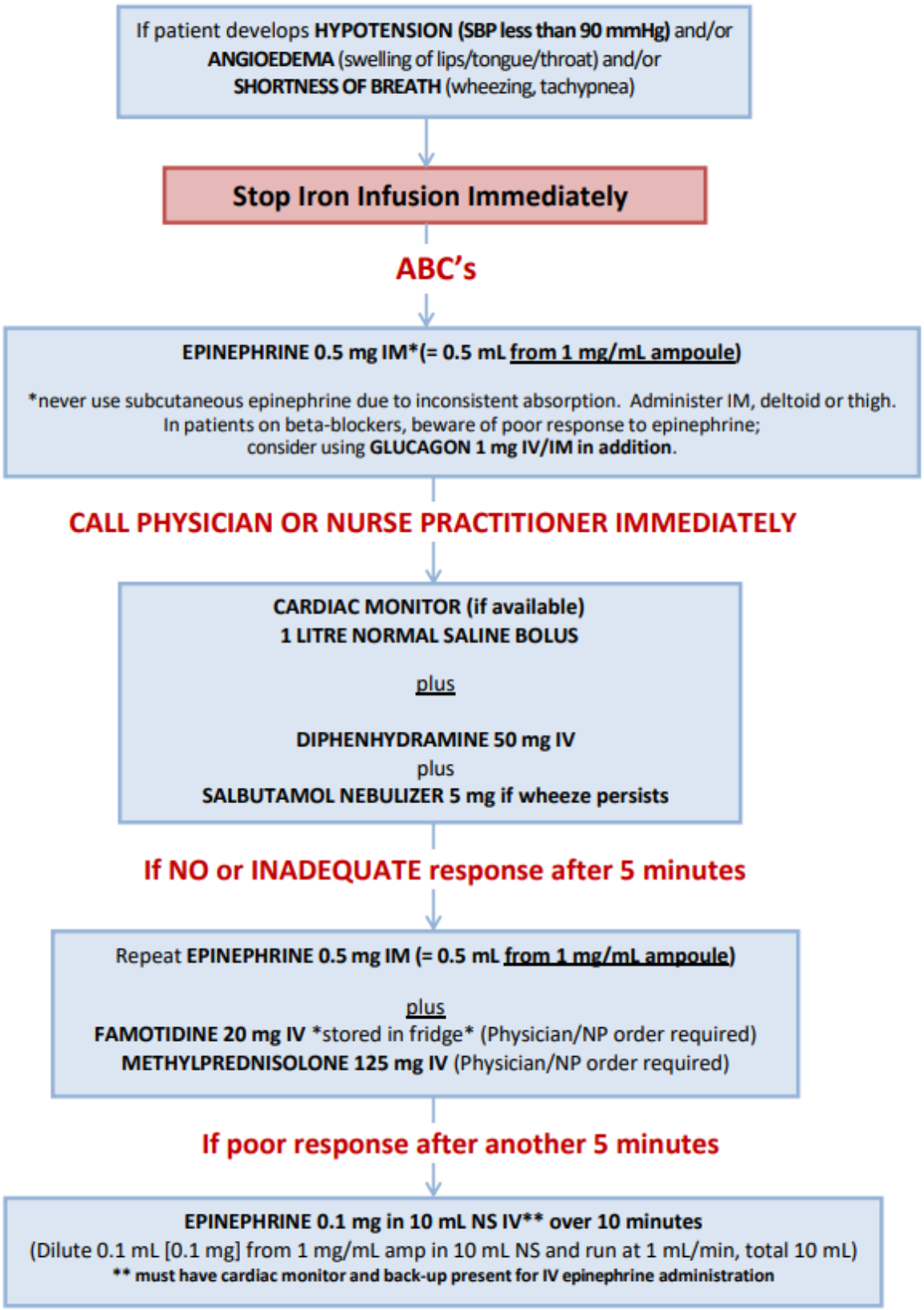
	Ferric derisomaltose (Monoferric®)	Iron sucrose (Venofer®)
Contraindications	- A history of allergic reaction to this IV iron preparation - Non-iron deficiency anemia (e.g., hemolytic anemia) - Iron overload (e.g., hemochromatosis and chronic hemolysis) or iron utilization disorder (e.g., sideroblastic anemia and lead-induced anemia) - **First trimester of pregnancy**	
	- Decompensated liver cirrhosis or active hepatitis - **Pregnancy**	
Precautions	- A history of severe allergic reaction to another IV iron preparation - Low body weight: consider a lower dose and a slower rate of administration - Active systemic infection (e.g., suspected sepsis) as iron is a good microbial nutrient	
	- Geriatric (65 years and older): monitor closely for adverse effects - Liver failure (ALT or AST greater than 3 times the upper limit of normal): monitor closely to prevent iron overload	- Geriatric (65 years and older): start with a lower dose
Most common or serious adverse effects	Anaphylaxis or allergic reaction (urticaria) (usually up to 30 minutes after the start of IV iron administration and can occur beyond the first administration). Fishbane reaction: (variable presentation and severity, usually during the first 15 minutes after the start of IV iron administration) - Flushing of the face or neck - Truncal myalgia, joint or back pain, or chest tightness with or without dyspnea - The absence of either of the two signs strongly suggestive of anaphylaxis Hypotension, tachycardia (through and up to 30 minutes after administration) Flu-like symptoms (usually 24 to 72 hours after IV iron administration) - Fever, dizziness, fatigue, headache, muscle pain Others: - Diarrhea or constipation, nausea, dysgeusia, metallic taste - Pain at the injection site - Phlebitis - Seizures - Hypophosphatemia (5 to 20 days after IV iron administration)	
Most significant drug interactions	- Decreased absorption of oral iron - ACEIs and beta-blockers: incidence and severity of anaphylactoid reactions may increase	

Appendix 2: Managing Infusion Reactions and Adverse Effects

(in consultation with MD/NP)

Observed Signs and Symptoms	Required Actions
Anaphylaxis with or without anaphylactic shock *very likely if either of the following two signs is present after exposure to an allergen:* ➢ The sudden appearance of symptoms (a few minutes to several hours) on the skin or mucous membranes (e.g., generalized urticaria, pruritus or redness, and inflammation of the lips, tongue and uvula) and at least one of the following: – Respiratory impairment – A drop in BP or symptoms associated with target organ dysfunction – Severe gastrointestinal symptoms ➢ A drop in BP (systolic BP less than 90 mmHg or a decrease of more than 30% from the patient's baseline values) or bronchospasm or laryngeal involvement after exposure to a known allergen for this patient (a few minutes to several hours), even without cutaneous symptoms.	➢ Stop the infusion immediately. ➢ Call physician or nurse practitioner immediately. ➢ Lay them on their back (or in a comfortable position if they are vomiting or in respiratory distress) and elevate their lower limbs. ➢ Manage the anaphylaxis (epinephrine/supportive treatments/cardiopulmonary resuscitation if required). ➢ Do regular and frequent (ideally continuous) monitoring of BP, HR, RR and SpO_2. ➢ Document the reaction.
Fishbane reaction ➢ Flushing of the face or neck ➢ Trunk myalgia, joint or back pain, or chest tightness with or without dyspnea ➢ Absence of either of the two signs strongly suggestive of anaphylaxis	**Alert:** Antihistamines should not be used, as they can exacerbate the reaction.
Isolated symptoms *At least one of the following symptoms:* ➢ Injection site irritation ➢ Urticaria, pruritus ➢ Nausea ➢ Diarrhea ➢ Abdominal pain ➢ Isolated hypotension that does not meet the criteria for anaphylaxis	**Isolated urticaria:** an antihistamine at usual recommended dosage may be considered. **If infiltration or extravasation** at the injection site: refer to local techniques.
	➢ Stop the infusion for at least 15 minutes ➢ Monitor the patient until the symptoms and signs resolve ➢ **If the symptoms regress** in less than 60 minutes: – Resume infusion at half the rate – Discontinue the infusion if symptoms reappear ➢ **If the symptoms have not regressed** after 60 minutes: – Do not resume the infusion

Appendix 3: Anaphylaxis Algorithm for Intravenous Iron Infusion Protocol



September 2022

APPENDIX B: INTRAVENOUS IRON PATIENT INFORMATION SHEET

Why is iron important?
Iron is an essential mineral. It is part of hemoglobin. Hemoglobin carries oxygen in the blood and helps make red blood cells. If you have very little iron, you may have very few red blood cells. This condition is called anemia.

Why does oral iron (in pill form) not work as well as intravenous iron (in the vein)?
Some people may have side effects from oral iron pills, or cannot absorb oral iron into their body. It can also take months for you to get the same dose of iron from oral iron as you can get from one dose of intravenous (IV) iron (iron given in the vein).

Who should get IV iron?
Your doctor or nurse practitioner may suggest IV iron for iron deficiency anemia if you have side effects to iron pills, if iron pills have not worked, if you have severe anemia, or if you are going for surgery very soon.

What are the risks of IV iron?
Common side effects (about 1 person in every 20 may have these):

- Low blood pressure (dizziness)
- Muscle cramps
- Joint pain
- Headache
- Injection site swelling
- Chest discomfort
- Nausea, vomiting and/or diarrhea

Serious allergic reactions (rashes, face swelling and wheezing) including anaphylaxis, are rare.

After you get IV iron, you will be watched for 30 minutes to make sure you do not have an allergic reaction or a drop in your blood pressure.

If you have any serious reactions after leaving the hospital or health centre, call your health care professional and/or go back to the hospital or health centre immediately.

Which form of IV iron might you receive?
Two IV iron products are available in Nunavut:

- Iron sucrose (Venofer®)
- Ferric derisomaltose (Monoferric®)

You and your doctor and nurse will talk about which one is right for you.