



STONEY HEALTH SERVICES POLICY AND PROCEDURES

IRON INJECTION POLICY (Z-TRACK METHOD)

Effective: July 11,2018	Policy Code: PP + TITLE	Applies To:	<input type="checkbox"/> Leadership & Operations
Review: July 11,2021	Sheet: 1 of 8		<input checked="" type="checkbox"/> Programs & Services
Revision:	Approval: A. Khan ED		<input type="checkbox"/> Client, Family & Community

Related Polices & Procedures: SHS Medication Management Policy

- 1. STANDARD:** Authorised nursing personnel at SHS shall administer Intramuscular (IM) Iron only as per medical order, other applicable regulations and the conditions of their scope of practice and those stipulated in the SHS Medication Management Policy.
- 2. RATIONALE:** Iron is an important part of red blood cell development needed to carry oxygen in the body. Intramuscular iron is given over series of injections. It should be used only when clearly needed and when clients are unable to take iron by orally either because of side effects or because their anemia has not been successfully treated by it. Low iron levels can occur when the body can't get enough iron from food (poor nutrition, poor absorption) or when there is a large or long-term blood loss (e.g. kidney dialysis, stomach bleeding etc.) or if a person is taking erythropoietin to help make new red blood cells. The dose and length of treatment is based on the client's age, weight, condition, and response to therapy.

Safe medication practices are strategic priorities for SHS.

SHS uses the Z-track method of intramuscular injection is to administer a drug in a large muscle to prevent tracking (or leakage) of the medication into the subcutaneous tissue (underneath the skin). The ventrogluteal muscle is usually selected as the site of IM injection (see Appendix I, Fig.1). The Z-track IM injection method may also be less painful than a traditional IM injection.

It is named Z-track because the specific IM procedure used creates a zigzag path to seal the drug in the muscle (see Fig.2). The Z-track IM injection is particularly useful with medication that must be absorbed by the muscle to work in order to ensure a full dosage, when using a dark-colored drug that can cause staining of the skin and /or when administering irritating medications such as Iron Dextran and Inferon as it is less likely that the client will develop injection site discoloration or lesions.

- 3. POLICY:** IV Iron is not administered by personnel of Stoney Health Services. Injectable iron (Dextran) shall only be administered intramuscularly using the Z-Track procedure (on page 4) . Due consideration shall be paid to the Contradictions, Complications/Side Effects and Clinical alerts/Special Considerations (on pages 2,3 & 4).

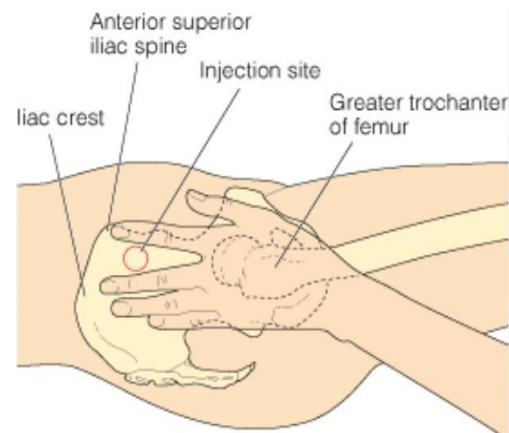


Fig. 1: Ventrogluteal Injection Site

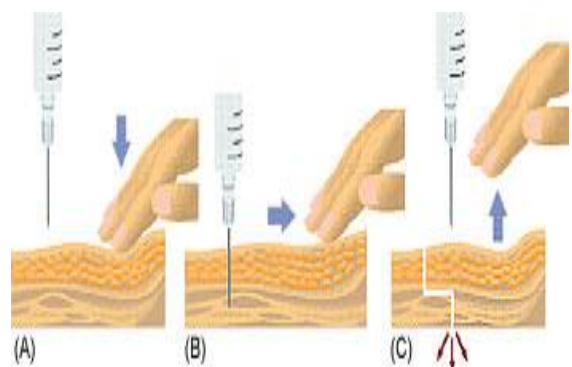


Fig. 2 : Z-Track Method Sealing Medication in Muscle



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4. CONTRAINDICATIONS (alphabetical order):

- Allergy to iron-containing products
- Asthma
- Bacterial infection of the kidney
- Hemolytic Anemia
- Increased bodily iron from high red blood cell destruction
- Iron Metabolism Disorder causing increased iron storage
- Rheumatic Disease causing pain & stiffness in backbone
- Rheumatoid Arthritis
- Serious problems with heart and blood vessels
- Severe liver disease
- Systemic Lupus Erythematosus

5. COMPLICATIONS\SIDE EFFECTS :

- Immediate/Short-Term Side Effects : Clients may have the following side effects during and/or after all injections. These may be alleviated by giving the drug more slowly
 - swelling and pain at injection site;
 - tingling of the hands/feet
 - shivering
 - dizziness
 - flushing
 - **More serious side effects can occur.** Advise the client to notify the nurse\physician if they persist side effects persist or worsen more than 4 to 7 days after the treatment. These can include :
 - back/joint/muscle aches
 - chills
 - moderate to high fever
 - headache and/or nausea/vomiting.
- Delayed Side Effects: Some people may experience a delayed reaction 1-2 days after their treatment. These side effects usually lessen within 3 to 7 days if the medication was injected into a muscle.



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6. CLINICAL ALERTS & SPECIAL PRECAUTIONS :

- **Clinical Alerts:** The following symptoms (in alphabetical order) are considered very serious allergic reactions should be treated as medical emergencies:
 - abdominal pain
 - blurred vision
 - chest pain
 - fast/slow/irregular heartbeat
 - itching and/or swelling (especially of the face/tongue/throat)
 - rash
 - seizures
 - severe dizziness
 - severe headache
 - trouble breathing

- **Special Considerations/Precautions**
 - This medication may interfere with certain laboratory tests (including bilirubin, calcium, and clotting times), possibly causing false test results.
 - Prior to initiating Iron injections, blood work (i.e. Hemoglobin, TIBC etc.) shall be carried out.
 - Before using, IM Iron liquid visually for particles or discoloration. If either is present, DO NOT USE.
 - Use the correct needle size. A rule of thumb in needle selection for IM injection is as follows : 200 lb (90.7 kg) – 2” needle ; 100 lb (45 kg) – 1 1/4” to 1 ½” needle.
 - First and second doses are given at the Stoney Health Center. **NB:** Before the first full dose, the physician gives a smaller test dose (0.5 ml) slowly to check for possible allergic reactions. If no reaction is seen after one hour, the full dose may be given. In the event that the client has an adverse reaction to injectable iron after the first and/or second dose, review with the prescriber before proceeding with further doses of injectable iron .
 - Check clients carefully for side effects.
 - Carry out requisite blood work (i.e. HgB, TIBC etc.) to monitor client's response.
 - The area around the injection site may be tender, irritated, or discolored (brown).



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- Use alternate injections sites (i.e. from right to left buttock).
- Report serious side effects to Health Canada at 1-866-234-2345 and inform the Manager/Supervisor.

7. PROCEDURE:

1. Wash hands.
2. Verify clients' identification using 2 client identifiers.
3. Verify client's allergies/medical history to ensure that he/she has no contraindications to the medication.
4. Ensure that the client has a valid medical order.
5. Verify the client's understanding regarding the Iron injection & document informed consent.
6. Prepare supplies as follows:
 - Clean gloves
 - Vial containing the medication
 - 1 alcohol swab
 - 2 nonsterile gauze pads
 - One x 21 G or 22 G needle, 1 inch or 1 1/2 inch long, depending on the client's adiposity
 - 1 x 3 mL syringe.

7. Don gloves.

8. Inject iron slowly using aseptic Z-track technique as follows:

- Begin with skin layers in normal position (See Fig. 3);
- Choose the ventrogluteal injection site as shown on page 1, Fig. 1 and place gloved fingers on the skin surface to mark the starting point for the Z-Track method. position. Pull firmly downward and laterally on the skin and subcutaneous tissue to a distance of approximately 1 to 1 ½ inches from the original finger site position (See Fig. 4);

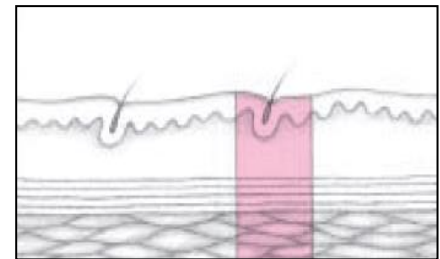


Fig. 3 : Skin, Subcutaneous, Adipose & Muscle Tissues in Normal Alignment (Pink)

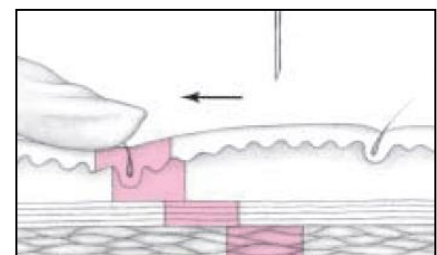


Fig. 4 : Skin & Subcutaneous Tissue Pulled Out of Alignment with Muscle



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- Holding the skin taut with the gloved nondominant hand, insert the needle at a 90 degree angle at the spot where the finger was initially placed before displacing the skin laterally. (See Fig. 5). ***NB:** Be sure to insert the needle deeply enough to reach the muscle;*

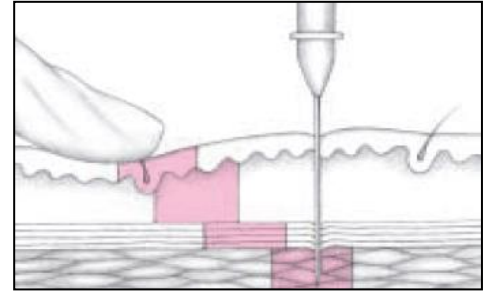


Fig. 5 : Injection Site at 90 Degree Angle at Original Finger Site

- Release the taut skin. A zigzag needle track is created when the layers of tissue slide across each other) preventing the escape of medication from the muscle tissue(See Fig. 6);
- **Do not massage the site.**This may cause irritation or force the drug into subcutaneous tissue.
- Encourage the patient to mobilize (walk or move in bed) to facilitate the absorption of medication.

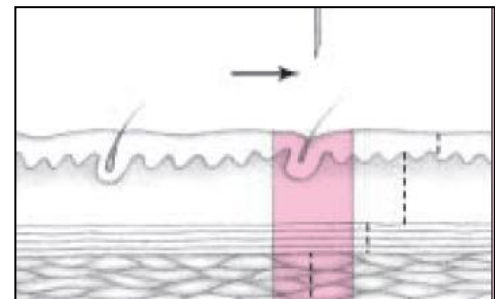


Fig. 6 : Finger Slowly Removed Creating Zigzag Needle Track (Sliding tissue layers cross over each other ; see dotted lines)

9. Remove gloves and discard the equipment in an appropriate sharps container.

10. Counsel the Client Post Injection:

- To wait for at least 15 minutes after the injection before leaving;
- To observe the injection site for redness, edema, pain or any other sign of tissue lesions;
- To notify the nurse if he/she has the above symptoms as well as any other symptoms/concerns
- To seek medical attention if the symptoms do not disappear or increase within 4 to 7 days;
- To apply a cold compress to the site to decrease swelling and relieve pain;
- To follow the iron injection schedule as per the physician's orders;
- To store the iron at 20 to 25 degrees Celsius ;



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- Not to wear tight or constricting clothing as this may force out the injected medication to the subcutaneous layers.
- To eat foods high in iron (i.e. organ and other meats, leafy green vegetables, raisins, molasses etc.) unless medically contraindicated;
- To avoid taking antacids or dairy products with oral iron (diminishes iron absorption). .
- To continue iron therapy for total therapy time (6 to 12 months), even when fatigue is no longer present.

11. Assess the site immediately after administering the injection and at the next possible opportunity.

12. Document: Document the procedure in the client's EMR as per the Master Medication Management Policy.

8. INDICATORS AND FORMULAE :

Indicators /Measures	Calculation
Rate of medication safety events per quarter related to Iron injections	$\frac{\text{Number medication safety events per quarter related to Iron injections} \times 100\%}{\text{Number adverse events per quarter}}$

9. DEFINITIONS:

- **Iron-Deficiency Anemia:** Iron-deficiency anemia typically results when the intake of dietary iron is inadequate for hemoglobin synthesis. Iron deficiency anemia is the most common type of anemia in all age groups, and it is the most common anemia in the world. The most common cause of iron-deficiency anemia in men and postmenopausal women is bleeding from ulcers, gastritis, inflammatory bowel disease, or GI tumors. The most common causes of iron-deficiency anemia in premenopausal women are menorrhagia (ie. excessive menstrual bleeding) and pregnancy with inadequate iron supplementation. Patients with chronic alcoholism often have chronic blood loss from the GI tract, which causes iron loss and eventual anemia. Other causes include iron malabsorption, as is seen after gastrectomy or with celiac disease.



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10. REFERENCES:

- Lippincott, Williams & Wilkins (2009) Lippincott's Nursing Procedures,5th Edition, p. 351
- Medicinenet.com http://www.medicinenet.com/iron_dextran-injection/article.htm
- Nursingcrib.com; <http://nursingcrib.com/nursing-notes-reviewer/fundamentals-of-nursing/z-track-method/>
- Wolters Kluwer Health / Lippincott Williams & Wilkins (2010) Handbook For Brunner & Suddarth's Textbook of Medical-Surgical Nursing; p.43
- Wolters Kluwer Health / Lippincott Williams & Wilkins, (2011) , NCLEX: RN-Review-Made-Incredibly-Easy

11. RESPONSIBILITIES:

- A. The Executive Director shall approve this policy.
- B. The Manager of Community Health & Wellness, Primary Care & Public Health and the Manager of Home & Community Care shall jointly ensure the application of this policy.
- C. All authorized SHS Nursing Personnel and Consultants (Physicians, Nursing personnel etc.) shall comply with this policy.

12. REVISED BY:

- K. Nelson (Home Care Nurse), M. Evans (TB Nurse) and S.Khan (Nurse Practitioner)
- Date:

13. APPROVALS:

A. Khan
Chief Executive Officer
Executive Director

Date