# Hemodialysis: Administration of Iron Preparations During Hemodialysis

## Site Applicability

All Hemodialysis Units (SPH In-center, Metro and Coastal Community)

## Practice Level

Nurses who have completed the required education and who provide care in a PHC Renal Program hemodialysis specialty perform this procedure

## Requirements

1. A prescriber's order (paper or electronic) is required to initiate IV iron therapy and to specify the type of iron preparations for the patient

## Algorithm(s)

Iron Infusion and Hemoglobin Algorithm for Hemodialysis Patients (August 2023). (See Appendix A)

## Need to Know

1. Regular iron bloodwork at Providence Health Care (PHC) is completed at three monthly intervals (March, June, September, and December).
2. Anemia management is based on patient's current hemoglobin, serum Ferritin and Transferrin Saturation percent (see Appendix A)
3. Iron Sucrose (VENOFER) (20 mg/mL, 5 mL ampoules) is the only IV Iron preparation being used in the PHC Renal Program, except if the patient has an allergic reaction to the medication. For the monograph, refer to the Parenteral Drug Therapy Manual [PDTM].
4. Nurse will write or electronically enter an iron order as per IV iron protocol
5. Nurses should follow Iron Infusion and Hemoglobin Algorithm (see Appendix A) after IV Iron therapy has been initially ordered and should adjust the frequency as per institutional algorithm.
6. VENOFER does NOT require a test dose.
7. Prior to scheduled 6 weekly iron bloodwork, nurses should not hold IV iron if patient is receiving loading dose of iron therapy. Each course should always be completed (See Appendix A).

8. Nurses should only hold IV iron one week prior to the three monthly iron bloodwork if patient is receiving a maintenance therapy.
9. For anaphylaxis/anaphylactoid reactions and management, see Communication Conditional orders in Cerner or Hemodialysis: Anaphylaxis Treatment
10. All types of IV Iron preparations being used are non- dialyzable.

## Equipment and Supplies

1. 1 –100 mg/5 mL of iron sucrose (VENOFER)
2. 1– 18 g needle
3. 1 – 18 g filtered blunt fill needle (to use for glass vials)
4. 1 – 10 mL syringe or 20 mL syringe depending on dialysis machine used.
5. 1 – 2 alcohol swabs
6. 2– 50 mL of sodium chloride 0.9%
7. Infusions pump with the appropriate IV tubing.

## Protocol

## Administration

| STEPS | RATIONALE |
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| 1. Obtain two bags of 50 mL normal saline<br>a. Draw up 100 mg/ 5 mL of VENOFER, into a syringe and add to the first 50 mL bag of sodium chloride 0.9%.<br>b. Hang prepared IV iron with infusion tubing set to IV pole<br>c. Prime IV infusion set with the IV iron and load to IV pump<br>d. Connect into the venous chamber or to the venous port line segment<br>e. Program the Alaris pump to Infuse over two hours (e.g. 45 mL for IV iron at 32.5 mL/hr; then 20 mL for normal saline at 32. 5 mL/hr for a total volume of 65 mL)<br>f. When IV iron bag is at one third level of the drip chamber, flush with 20 mL normal saline from the second mini bag | Rapid infusion is associated with hypotension, flushing, light-headedness, malaise, weakness and severe pain from the chest, back, flanks or groin<br><br>This process will ensure patient receives the ordered or intended dose |

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| 2. If no infusion pump available:<br>a. Draw up 100 mg/ 5 mL of VENOFER, in a 10 mL or 20 mL syringe depending on the dialysis machine used.<br>b. Draw up 5 mL of sodium chloride 0.9% without preservative to make 10 mL VENOFER solution.<br>c. Infuse over two hours using the heparin pump on the hemodialysis machine (5 mL/hour for 2 hours). | Preservatives can have adverse systemic side effects if introduced into the vascular system |
| 3. If iron infusion is necessary in tandem with other IV medications (e.g. Magnesium, calcium gluconate)<br>a. Connect IV iron infusion tubing to the **arterial port** line segment and the IV medication to the **venous port** line segment | This allows total dose of the iron is completely given during dialysis |

## Documentation:

1. Document vital signs in Cerner iView under intra- dialysis management and patient response/s in nursing narrative note
2. Changes to the IV iron therapy frequency are documented in the "NEPH AMB Hemodialysis Adjunct medication" PowerPlan as per anemia management algorithm.

## Patient and Family Education

1. Know the meaning of anemia within their level of understanding – "Red blood cells are the cells in your blood that carry oxygen. If you do not have enough red blood cell cells, your body might not get all the oxygen it needs" ( see Reference No.8)
2. Understand the common reason of anemia is lack of iron ("iron deficiency anemia") due to the large amount of blood lost; the body cannot absorb enough iron from food; patient does not get enough iron in the food
3. Able to identify the symptoms of iron deficiency anemia – irritability, feeling tired or weak especially if doing exercise or walking up stairs, having headaches, having chest pain or trouble breathing
4. Able to recognize any of the IV iron side effects – hypotension, rash, hives, pruritus, nausea, vomiting, diarrhea, dizziness, headache, fever, flushing, weakness, generalized muscle or abdominal cramps, pain; and to report immediately

## Related Documents

1. B-00-12-10059 - Hemodialysis: Administration of IV Medications via Venous Port
2. B-00-13-10055 - Hemodialysis: Heparin Protocol
3. B-00-13-10130 - Hemodialysis: Anaphylaxis Treatment

## References

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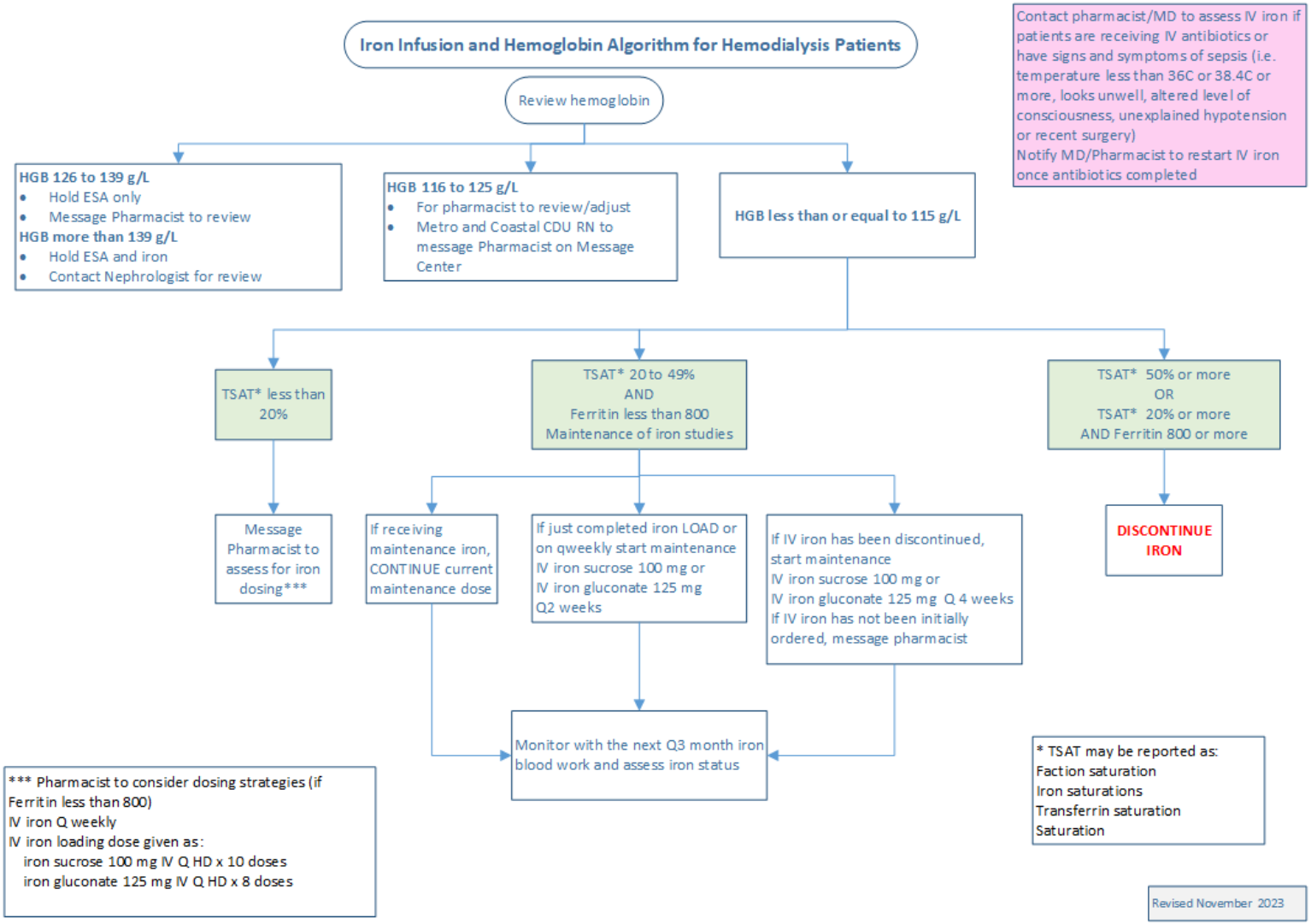
3. Berns, J., Golper, T., & Sheridan, A. (Eds.). (2012). Literature review: Use of iron preparations in hemodialysis patients. Retrieved April 12, 2012 from http://www.uptodate/com/contents/useof-iron-preparations-in-hemodialysis-patients?view.
4. British Columbia Renal Agency (2021). Hemodialysis Anemia Management Protocol. Accessed at http://www.bcrenal.ca/
5. Daugirdas, J., Blake, P., & Ing, T. (Eds.). (2014). Handbook of Dialysis. Lippincott Williams & Wilkins, NY.
6. Intravenous Therapy: Priming and changing a solution. Elsevier Clinical Skills (2022). St. Louis, MO. Elsevier. Retrieved May 31, 2023 from www.elsevierskill.com
7. Molzahn, A., and Butera, E., (Eds.) (2006) Contemporary Nephrology Nursing: Principles and Practice, Second Edition, American Nephrology Nurses Association, Anthony J. Jannetti Inc., New Jersey.
8. Health Canada, Government of Canada. (2014). Feraheme (ferumoxytol) – Important changes to the delivery and new restrictions on the use due to information on serious allergic/reactions – for health professionals. Retrieved June 26 2019 from https://www.healthycanadians.gc.ca/recallalert-rappel-avis/hc-sc/2014/40505a-eng.php
9. UpToDate©. (2022). Patient Education: anemia caused by low iron (Beyond the Basics). Retrieved May 31, 2023 from https://www.uptodate.com/contents/anemia-caused-by-low-iron-in-adults-beyond-the-basics?search=anemia%20caused%20by%20low%20iron&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2

## Appendices

1. Appendix A - Iron Infusion and Hemoglobin Algorithm for Hemodialysis Patients

# Appendix A – Iron Infusion and Hemoglobin Algorithm for Hemodialysis Patients



## Persons/Groups Consulted:

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