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MANITOBA RENAL PROGRAM

SUBJECT ▪ Prevention and Treatment of Hypophosphatemia for Patients on Hemodialysis by utilizing phosphate additives.	**SECTION**	30.10. Hemodialysis Equipment and Procedures
	CODE	30.10.17
AUTHORIZATION ▪ Professional Advisory Committee, Manitoba Renal Program ▪ Nursing Practice Council, St. Boniface Hospital	**EFFECTIVE DATE**	September 2009
	REVISION DATE	February 2009 April 2013 May 2015 January 2018

PURPOSE:

1. To prevent hypophosphatemia in patients receiving nocturnal/long daily hemodialysis treatments.

POLICY:

1. The Home Hemodialysis team will use the following guidelines and procedures to manage phosphate levels in patients receiving nocturnal/long daily hemodialysis treatments. Any changes in treatment and medication must be ordered by the nephrologist.

2. Registered Nurses, Licensed Practical Nurses in hemodialysis may add the sodium phosphate enema to the acid concentrate upon a nephrologist's order.

3. A Home Hemodialysis patient educator or delegate will teach Nocturnal/long daily hemodialysis patients the procedure. The patient must demonstrate an understanding of the protocol. Documentation is to be included on the patient chart.

GUIDELINES:

1. Target phosphorus concentrations:
- **a.** Pre-dialysis phosphorus concentrations should be maintained between 0.7– 1.8mmol/L.
- **b.** Post-dialysis phosphorus concentrations should be maintained above 0.4 mmol/L.

2. When pre-dialysis phosphate levels are <0.7 mmol/L and/or post-dialysis phosphate levels are <0.4mmol/L:
- **a.** Eliminate phosphate binders sequentially
  AND
- **b.** Liberalize dietary phosphate intake (in consultation with a renal dietitian)

3. If, despite implementation of Step 2, pre-dialysis phosphate levels are ≤ 0.7 mmol/L and/or post-dialysis phosphate levels are ≤0.4 mmol/L (following review of pre-dialysis bloodwork) initiate phosphate supplementation:
- **a.** Add 15 mL sodium phosphate enema to the 5L dialysate acid concentrate jug (physician's order required). Repeat pre- and post-dialysis phosphate levels in 1 week or sooner if any symptoms of hypophosphatemia.
- **b.** If phosphorus concentration is below target, increase dose of sodium phosphate enema by 15 mL per 5L acid concentrate jug (physician's order required). Repeat pre- and post-dialysis phosphorus levels 1 week later or sooner if any symptoms of hypophosphatemia.
- **c.** If phosphorus concentration is within target, continue with the same volume of sodium phosphate

GUIDELINES:

enema every dialysis treatment.

d. Ongoing monitoring of pre- and post-hemodialysis phosphate levels should be performed with monthly blood testing.

NOTE: Patients may be instructed not to add sodium phosphates (Fleet Enema®) to their acid concentrate the first nocturnal/long daily hemodialysis after a night off, as phosphate may have accumulated during their extended time off dialysis.

EQUIPMENT:

- Adult sodium phosphate enema [Fleet Enema® (Johnson & Johnson) or Life Brand Enema® (Shoppers Drug Mart)]
  - Contain 1.38 mmol phosphorus (P)/mL
  - Each 15 mL will increase the final dialysate phosphorus (P) concentration by 0.092 mmol/L.

  (Calculations: 1.38 mmol P/mL x 15 mL = 20.7 mmol P/5L acid concentrate = 4.14 mmol/L/45 x dilution = 0.092 mmol/L)
- Acid concentrate jug – 5L (45x dilution)

PROCEDURE:

KEY POINT:

1. Open prescribed acid concentrate jug.

2. Remove protective cap from the sodium phosphate enema tube. Measure prescribed dose using a medication cup and add to the acid concentrate jug.

3. Replace cap on acid concentrate jug and mix thoroughly to ensure that the enema solution has dissolved.

4. Apply medication sticker to acid concentrate jug.

5. Proceed with machine set-up.

6. Schedule bloodwork for phosphorus every week x 3, then PRN as directed by physician.

- Serum phosphorus concentrations may change rapidly with the addition of the sodium phosphate enema.
- Bloodwork for phosphorus may be ordered sooner than 1 week if patient has symptoms of hypophosphatemia.

DOCUMENTATION:

- Medication Administration Record
- Renal Medication Flowsheet

GUIDELINE DEVELOPERS:

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- James Zacharias, MD, Nephrologist, Manitoba Renal Program
- Judy Olson, RN, Home Dialysis Nurse, Manitoba Renal Program

- Lori Wazny, Pharm.D., Clinical Pharmacist, Manitoba Renal Program

REFERENCES:

Canadian Society of Nephrology: 2012 Guidelines for Management of Patients with End Stage Renal Disease Treated with Intensive Hemodialysis.

Licensed Natural Health Products Database, Health Canada website (Natural Product Number (NPN) 02231170 for generic sodium phosphate enemas ingredients and NPN 00009911 for Fleet Enema

Provincial IAMHD Program Policy & Procedure: Phosphate Additive Guideline Protocol for Patients Receiving Nightly Nocturnal Hemodialysis, BC Renal Agency, February 2007, revised June 2009.

Personal communication Johnson & Johnson/Merck Medical Information Department (phosphorus concentration)

Nesrallah GE, Suri RS, Lindsay RM, Pierratos. Frequent hemodialysis. In: Daugirdas JT, Blake PG, Ing TS, eds. Handbook of Dialysis. 4th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2007: 260. (Fleet enema phosphorus concentration)