

PHOSPHATE INTRAVENOUS (IV) REPLACEMENT

This drug protocol is developed to guide clinical practice at the Royal Hospital for Women. Individual patient circumstances may mean that practice diverges from this protocol.

1. AIM

- To provide guidance on intravenous phosphate replacement for hypophosphatemia.

2. PATIENT

- Woman with hypophosphatemia

3. STAFF

- Medical, midwifery and nursing staff
- Pharmacists

4. EQUIPMENT

- Infusion pump

5. CLINICAL PRACTICE

- Review *POWH Clinical Business Rule "Potassium, Intravenous Administration and Storage"* as this LOP must be used together with this http://seslnweb.lan.sesahs.nsw.gov.au/powh/documents/cpm/Section04/Potassium%20Intravenous%20Administration%20and%20Storage_POWH%20CLIN057_10thNov2020.pdf
- Administer IV phosphate by a Registered Nurse or Midwife only.
- Do not administer with other medications without seeking advice from Pharmacy first
- Ensure the correct phosphate salt is prescribed and administered. All orders must be prescribed in full without abbreviations
- Take care to follow the correct guideline for the preparation you are using. **Two preparations of intravenous phosphate are available and administered differently as outlined below.** These are:
 - **SODIUM** dihydrogen phosphate (each 10mL ampoule contains 10mmol sodium ions, 10mmol phosphate ions and 20mmol hydrogen ions).
 - **POTASSIUM** dihydrogen phosphate (each 10mL ampoule contains 10mmol potassium ions, 10mmol phosphate ions and 20mmol hydrogen ions)
- Take extreme caution in woman with renal impairment as is prone to severe life-threatening hyperphosphatemia.
- Avoid rapid or excessive intravenous phosphate administration as this may precipitate symptomatic hypocalcaemia.
- Monitor serum electrolytes closely whilst phosphate replacement is in progress.

SODIUM DIHYDROGEN PHOSPHATE

Peripheral line administration:

- Dilute 10mmol of sodium dihydrogen phosphate in 250mL sodium chloride 0.9% or glucose 5%. Ensure adequate mixing by inverting the bag several times.
- Administer over 2-6 hours into a large peripheral vein
- Monitor for signs of tetany (muscle cramps, spasms, or tremors) as this may indicate hypocalcaemia.
- Monitor serum sodium, phosphate, and renal function regularly (every 12-24 hours).

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Central line administration:

- Dilute 10mmol of sodium dihydrogen phosphate in 50-250mL sodium chloride 0.9% or glucose 5%. Ensure adequate mixing by inverting the bag several times.
- Administer over 2-3 hours with a maximum rate 0.2mmol/kg/hour
- Monitor for signs of tetany (muscle cramps, spasms, or tremors) as this may indicate hypocalcaemia.
- Monitor serum sodium, phosphate, and renal function regularly.

POTASSIUM DIHYDROGEN PHOSPHATE

Peripheral line administration:

- Dilute 10mmol of potassium dihydrogen phosphate in 250mL of sodium chloride 0.9% or glucose 5%.
- **Ensure careful and thorough mixing of solution after dilution to prevent pooling of ions in the flask or bag. Invert the bag at least ten times to ensure even distribution**
- Ensure adherence to the potassium policy. Maximum concentration of potassium dihydrogen phosphate that can be administered via a peripheral line is 40mmol/L. Concentrations greater than this must be administered by a central line.
- Administer potassium dihydrogen phosphate over 2-6 hours. If a faster administration rate is required, the maximum rate is dictated by the potassium content. The maximum rate of administration on general wards is 10mmol/hour. If an administration rate greater than 10mmol/hour is required, the woman must be transferred to Acute Care for cardiac monitoring and be cared for by nursing staff skilled in cardiac rhythm interpretation.
- Monitor for signs of tetany (muscle cramps, spasms, or tremors) as this may indicate hypocalcaemia.
- Monitor serum sodium, phosphate, and renal function at least every 12-24 hours. If the infusion rate is 10mmol/L/hour for more than 4 hours, measure the sodium, phosphate, and renal function hourly.

Central line administration:

- Dilute 10mmol of potassium dihydrogen phosphate in 50-250mL of sodium chloride 0.9% or glucose 5%.
- Administer potassium dihydrogen phosphate over 2-4 hours. If a faster administration rate is required, the maximum rate is dictated by the potassium content. The maximum rate of administration on general wards is 10mmol/hour. If an administration rate greater than 10mmol/hour is required, the woman must be transferred to Acute Care for cardiac monitoring and be cared for by nursing staff skilled in cardiac rhythm interpretation.
- Monitor for signs of tetany (muscle cramps, spasms, or tremors) as this may indicate hypocalcaemia.
- Monitor serum sodium, phosphate, and renal function at least every 12-24 hours. If the infusion rate is 10mmol/L/hour for more than 4 hours, measure the sodium, phosphate, and renal function hourly

6. DOCUMENTATION

- Medical records
- NSW Health Fluid Balance Chart
- NSW Health Observation Chart
- Gynaecological High Acuity Chart

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7. EDUCATIONAL NOTES

Nil

8. RELATED POLICIES / PROCEDURES / CLINICAL PRACTICE LOP

- POWH Clinical Business Rule: Potassium, Intravenous Administration and Storage

9. RISK RATING

- High: Review in 2 years

10. NATIONAL STANDARD

- Medication safety

11. REFERENCES

- Australian Injectable Drug Handbook, accessed via CIAP online 04/08/2020
- MIMS Online available via CIAP accessed 04/08/2020
- Dickerson RN. Guidelines for the intravenous management of hypophosphatemia, hypomagnesemia, hypokalemia, and hypocalcemia. Hospital Pharmacy. 2001; 36(11):1201-1208

REVISION & APPROVAL HISTORY

Reviewed and endorsed Therapeutic & Drug Utilisation Committee 25/8/21
Approved Quality & Patient Care Committee 19/10/17
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