Guideline for the Management of HYPOPHOSPHATAEMIA in Adults

Definition(s)

LOW serum phosphate level

- MILD hypophosphataemia - serum phosphate 0.6 to 0.69mmol/L and no signs or symptoms of hypophosphataemia
- MODERATE hypophosphataemia - serum phosphate 0.31 to 0.59mmol/L or showing signs or symptoms of hypophosphataemia
- SEVERE hypophosphataemia - serum phosphate less than 0.3mmol/L

Care Settings

This guideline is for the management of adults only.

Potential Causes

Note that this list is NOT exhaustive

- Severe malnutrition or anorexia
- Excess alcohol intake
- Severe burns
- Diabetic ketoacidosis
- Hyperparathyroidism
- Chronic diarrhoea
- Vitamin D deficiency

Common drugs causing hypophosphataemia include:

- Aminophylline
- Diuretics
- Beta-agonists
- Insulin
- Phosphate binders
- Dopamine
- Corticosteroids
- Theophylline
- Antacids
- Bisphosphates
Guideline: ADULT

Signs and Symptoms

Hypophosphataemia may be asymptomatic. It can however cause a number of symptoms and signs, most of which are non-specific and rarely occur unless the phosphate level is less than 0.3mmol/L.

They include:
- Weakness
- Anorexia
- Malaise
- Tremor
- Paraesthesia
- Seizures
- Acute respiratory failure
- Arrhythmias
- Altered mental status
- Hypotension

Initial Actions

- Identify and manage underlying cause if possible.
- Stop any offending drugs.
- Determine serum Phosphate level and use flow diagram below to determine management option.

Monitoring Requirements

- Check serum phosphate concentration 2 to 12 hours after each dose to determine if repeat doses are required.
- Daily serum phosphate, calcium, magnesium, sodium and potassium levels. Rapid infusion may lead to rapid changes in electrolyte concentrations and/or precipitate arrhythmias.
- Daily renal function.
- Veins should be monitored for thrombophlebitis, especially if IV phosphate is given peripherally. Note that rapid infusion may lead to rapid changes in concentration of serum electrolytes and/or precipitate arrhythmias.
- Blood pressure.
- Nausea and vomiting may occur with oral.
- Excessive doses of phosphate may cause hyperkalaemia, hypocalcaemia and metastatic calcification. Patients with hypocalcaemia should have their calcium corrected before replacing phosphate to prevent further hypocalcaemia.
Guideline: ADULT

Note that it is not usually necessary to treat patients with MILD hypophosphatemia, however if patient is symptomatic or the clinician feels treatment is appropriate follow the treatment recommendations for MODERATE hypophosphatemia.

**SEVERE**
Less than 0.3mmol/L

**MODERATE**
0.31 to 0.59mmol/L

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**What is patient’s phosphate level?**

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**INTRAVENOUS (IV) REPLACEMENT** (Two Options)

1. Polyfusor Phosphate (500mL contains 50mmol of phosphate, 81mmol of sodium and 9.5mmol of potassium).
2. Sodium Glycerophosphate 21.6% concentrate solution for infusion (ONE 20mL ampoule contains 20mmol of phosphate and 40mmol of sodium).

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**Is oral access available?**

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**YES**

**Does patient have symptoms of hypophosphatemia?**

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**NO**

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**INTRAVENTOUS (IV) REPLACEMENT**

Dose: 10mmol to 50mmol of phosphate

1. **Polyfusor Phosphate**
   - *Dose:* 20mmol to 50mmol (200 to 500mL of Polyfusor Phosphate)
   - *Dilution:* Administer UNDILUTED
   - *Administration:* UNDILUTED via a CENTRAL or PERIPHERAL IV infusion over TEN hours (20 to 50 mL per hour)
   - **NOTE – must discard remaining polyfusor**

2. **Sodium Glycerophosphate 21.6% ampoules**
   - *Dilution:* To make a solution containing 10mmol phosphate – add 10mL sodium glycerophosphate 21.6% to 50mL of glucose 5%. To make a solution containing 20mmol phosphate – add ONE ampoule (20mL) sodium glycerophosphate 21.6% to 100mL of glucose 5%. To make a solution containing 40mmol phosphate – add TWO ampoules (40mL) sodium glycerophosphate 21.6% to 100mL of glucose 5%
   - *Administration:* The diluted solution should be administered via a CENTRAL line over TEN hours.

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**HIGH DOSE ORAL REPLACEMENT**

Phosphate Sandoz TWO tablets THREE times a day (16.1mmol phosphate per tablet).

Dissolve TWO tablets in at least 20mL of water.

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**LOW DOSE ORAL REPLACEMENT**

Phosphate Sandoz TWO tablets TWICE a day (16.1mmol phosphate per tablet).

Dissolve TWO tablets in at least 20mL of water.

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If sodium glycerophosphate is required via a PERIPHERAL line. Add ONE 20mL ampoule to 250mL of glucose 5% and administer over TEN hours.

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**NOTE – maximum concentration via peripheral route is 0.1mmol per ml**
**Adverse Drug Reactions**

Nausea and Vomiting is common with oral replacement

**ECG Monitoring**

NONE required

**Other Information**

Course lengths should be based on the clinical indication for use and stop dates or review dates specified on ePMA. If a patient is to be discharged before a course is completed then the GP must be given explicit information regarding monitoring and future management via the discharge summary.

**References**

- British National Formulary
  [https://bnf.nice.org.uk/](https://bnf.nice.org.uk/)
- Summary of Product Characteristics
  [https://www.medicines.org.uk/emc/](https://www.medicines.org.uk/emc/)
- IV Guide
  [https://medusa.wales.nhs.uk/](https://medusa.wales.nhs.uk/)
  User Name: cddward - Password: ivguide
- GGC Medicines Adult Therapeutics Handbook