

Hypophosphataemia In Adults

Risk factors for hypophosphataemia include critical illness, a period of starvation prior to nutritional support, malnutrition, alcoholism, and respiratory alkalosis.

Phosphate supplementation should be considered where there is evidence of phosphate deficiency. Serum phosphate does not always correlate to total body stores as most phosphate is stored intracellularly. The onset and severity of symptoms will determine the need for and type of treatment.

Drug Presentation:

Addiphos® 20ml vial containing : phosphate 40 mmol (2mmol phosphate /ml)
potassium 30 mmol
and sodium 30 mmol

No other drugs should be added to a phosphate infusion.

No other drugs should be co administered at a Y site with phosphate.

Caution should be used if the patient has renal impairment.

Mild to moderate deficiency :

usually associated with levels of 0.3-0.6mmol/l and is usually asymptomatic

Severe deficiency:

usually associated with levels less than 0.3mmol/l, especially if symptomatic.

Drugs and Administration

INTRAVENOUS:

- In acute deficiency, or when a clinical difference to serum phosphate needs to be assured quickly.
- 20mmols phosphate (10mls Addiphos) over 6 hours in 100mls 0.9% N Saline through a central line, or 20mmols phosphate (10mls Addiphos) in 500mls 0.9% N Saline over 12 hours through a peripheral line.
- In cases where the hypophosphataemia is symptomatic, or if prolonged phosphate wastage has occurred, then the dosage may be repeated within 12 hours and a level obtained several hours after the end of the infusion

Oral – see notes on diarrhoea before contemplating oral replacement

- 1-2 Phosphate Sandoz ® tablets (see BNF) three times a day (provides 48 - 96mmol phosphate, 60-120mmol sodium and 9-18mmol potassium per day)
- Continued therapy may be required depending on clinical response/adverse effects.
- Oral phosphate is slow to effect and should be used in slow-losers of phosphate only, and not when a rapid response is required.

Important side effects²

Hyperphosphataemia	Symptoms may be those of resultant hypocalcaemia namely, muscle cramps, tetany and convulsion and metastatic calcification.
Hyperkalaemia and Hybernatraemia	As a result of infusion of these elements along with phosphate
Hyperphosphataemia Hypotension Hypocalcaemia	High dose rapid infusions of phosphate. Excessive doses of phosphates may cause hypocalcaemia and metastatic calcification; it is essential to monitor closely plasma concentrations of calcium, phosphate, potassium and other electrolytes. Treatment of adverse effects involves withdrawal of phosphate infusion, general supportive measures and correction of serum electrolyte concentrations, especially calcium.
Diarrhoea with oral therapy	Oral phosphate is poorly absorbed from the gut and may cause diarrhoea, with the potential to exacerbate losses of Magnesium, Sodium, Potassium and water. .

Precautions

In renal impairment, Addisons disease and where restricted sodium or potassium intake is required e.g.. cardiac failure, hypertension, hyperkalaemia, severe oedema. Care should be taken when replacing phosphate to minimise electrolyte disturbances and the biochemist should be contacted for advice.

Monitoring

Blood pressure monitoring is advised

Calcium, magnesium, phosphate, potassium and other electrolyte monitoring is essential. Phosphate levels should be checked at least 6 hours after the end of the infusion³

Acknowledgements

Jane Sillars Senior Dietitian

Mark Holliday Consultant Biochemist

References June 2012-

1. Walmsley RN, Guerin MD. Disorders of fluid and electrolyte balance. Bristol 1984. Wright publishing
2. Thatte L, Oster J et al. Review of literature: Severe Hyperphosphataemia. Am J Med Sciences 1995; 310(4):167-174
3. Bugg NC, Jones A Hypophosphataemia. Anaesthesia 1998;53:895-902

Note: June 2012 This guideline is currently under review

Pharmacist Lead: Peter Buckner