Phosphate Replacement Guideline

NHS Lothian

[1]Life-threatening complications in hypophosphataemia: Acute respiratory failure, respiratory alkalosis, difficult mechanical ventilation wean, arrhythmias, impaired myocardial function, increased inotropic demand, delirium, seizures, coma, dysphagia, ileus, haemolysis, imparied leucocyte function, muscle weakness or myalgia
**List is not exhaustive. Discussion with senior team member is warranted if in doubt.

Severe hypophosphataemia

<0.32 mmol/l

IV phosphate replacement is indicated.

Prescribe IV phosphate preparation as highlighted on next page.

MONITORING:

Check serum phosphate level at least 24 hours post replacement.

If serum phosphate level is >0.65 mmol/l with absence of complications, IV phosphate can be discontinued and enteral replacement should be used instead.

Mild/Moderate hypophosphataemia

0.32- 0.8mmol/l

Are life-threatening complications present?[1]

OR

High risk of further phosphate reduction? eg DKA, refeeding syndrome, CRRT.

Yes

No

CRRT

IV phosphate replacement is **not** indicated.

Consider repeating serum phosphate level without replacement in 24 hours (or less if rapid decline in phosphate level is evident) to ensure serum phosphate level is stable.

Consider oral phosphate replacement if safe enteral route is available.

CRRT can predispose to rapid phosphate loss especially in longer duration, higher dialysate flow rates.

Discuss with senior team member if reducing length of CRRT treatment or reducing dialysate rate is appropriate, especially if biochemical control (creatinine) is adequate.

PHOSPHATE

PRESENTATION:	1**) Sodium glycerophosphate 21.6%:** 20ml ampoules containing 20mmol glycerophosphate (1mmol/ml) and 40mmol sodium. 2) **Potassium acid phosphate 13.6%:** 10ml ampoules containing 10mmol phosphate (1mmol/ml) and 10mmol potassium. 3**) Phosphate 500ml polyfusor** containing 50mmol phosphate, 9.5mmol potassium and 81mmol sodium.
INDICATION:	Hypophosphataemia. See previous page.
DOSE AND ADMINISTRATION:	The dose and choice of intravenous preparation will depend on the serum electrolytes and on renal function. Caution in renal insufficiency. **Sodium Glycerophosphate (21.6%):** **Central iv administration:** 20mmol (20mls) in 50mls glucose 5% over 5 hours (This contains 40mmols sodium). 40mmol (40mls) in 100mls glucose 5% over 5 hours (This contains 80mmol sodium). **Peripheral iv administration:** 20mmols (20mls) in 250mls glucose 5% over 5 hours (This contains 40mmols sodium). 40mmols (40mls) in 500mls glucose 5% over 5 hours (This contains 80mmol sodium). **Please remove a volume of glucose 5% from the 50ml and 100ml infusion bags, equivalent to the volume of phosphate preparation to be added to the bag.**

	If hypernatraemia is a concern use: **Potassium Acid Phosphate (13.6%):** **Central administration:** 20mmols (20mls) in 50mls glucose 5% over 5 hours (This contains 20mmols potassium). 40mmols (40mls) in 100mls glucose 5 over 5 hours (This contains 40mmols potassium). **Please remove a volume of glucose 5% from the 50ml and 100ml infusion bags, equivalent to the volume of phosphate preparation to be added to the bag.** **Phosphate polyfusor:** Central or peripheral IV administration: 500ml polyfusor administered over 12 hours (Can be given centrally over 6 hours if required).
STABILITY:	Physically and chemically stable for 24 hours at room temperature. Sodium glycerophosphate is also stable in sodium chloride 0.9%.

References:

1. Sodium glycerophosphate. Medusa. NHS Injectable Medicines Guide. Date published 5/07/22. https://www.medusaimg.nhs.uk/IVGuideDisplay.asp
2. Phosphate polyfusor. Medusa. NHS Injectable Medicines Guide. Date published 04/10/23 https://www.medusaimg.nhs.uk/IVGuideDisplay.asp
3. Sterile Potassium acid phosphate solution (13.6%). Summary of Product Characteristics. https://www.medicines.org.uk/emc/product/3572/smpc#gref Last updated on emc, 02/01/2015.
4. Geerse D, Bindels A J et al. Treatment of hypophosphatemia in the intensive care unit: a review. *Critical Care* 2010, 14:R14

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