Clinical Guideline

PHOSPHATE SUPPLEMENTATION IN CRITICAL CARE AND HIGH DEPENDENCY UNITS

SETTING
Paediatric Intensive Care and High Dependency Units

FOR STAFF
All clinical staff

PATIENTS
Paediatric patients on PICU or HDU requiring phosphate supplementation

GUIDANCE

Hypophosphataemia can be treated with either enteral or intravenous supplementation. Phosphate deficiency in neonates may compromise bone growth and oral supplementation may be required long term in some low birth weight babies. Sodium Glycerophosphate injection can be added to haemofiltration fluids to reduce the losses through the filter.

Preparations:
Oral:
Sodium phosphate liquid 17.9% containing 1mmol sodium and 0.5mmol phosphate in 1ml
Potassium phosphate liquid 17.42% containing 2mmol potassium and 1mmol phosphate in 1ml
Phosphate-Sandoz® equivalent to phosphate16.1mmol, sodium 20.4 mmol, potassium 3.1mmol per tablet

Intravenous:
Dipotassium phosphate 17.42% containing 2mmol potassium and 1mmol phosphate in 1ml.
Must be diluted to maximum concentration of 5mmol phosphate in 50ml glucose or sodium chloride.

Phosphate for IV infusion (Polyfusor®) containing 50mmol phosphate, 81mmol sodium and 9.5mmol potassium in a 500ml container.

Haemofiltration: Sodium glycerophosphate 21.6% for infusion containing 1mmol phosphate & 2mmol sodium in 1 ml.

Prescribing and Administration:
Oral:
Neonates and children < 10kg; starting dose 1mmol/kg daily in 1-2 divided doses as sodium or potassium phosphate.
Children 10kg and over; 2-3mmol/kg (max 48mmol) phosphate daily in divided doses as Phosphate-Sandoz®

Intravenous:
Neonates and children < 10kg; 1mmol/kg daily as dipotassium phosphate. The rate should not normally exceed 0.05mmol phosphate/kg/hr but in PICU may be increased to a maximum 0.25mmol phosphate/kg/hr via a central line or 0.1mmol phosphate/kg/hr via a peripheral line.

10mls/kg/day of dipotassium phosphate diluted to maximum concentration of 5mmol phosphate in 50ml provides 1mmol/kg phosphate and 2mmol/kg potassium.
Give over 20 hours unless on PICU when can be given over a minimum of 4 hours centrally or 10 hours peripherally.

Children 10kg and over; Doses of up to 1mmol/kg/day as Phosphate polyfusor®. The rate should not normally exceed 0.05mmol phosphate/kg/hr but in PICU may be increased to a maximum of 0.5mmol phosphate/kg/hr given centrally.

10mls/kg/day of Phosphate polyfusor® provides 1mmol/kg phosphate, 1.6mmol/kg sodium and 0.2mmol/kg potassium. Give over 20 hours unless on PICU when can be given over a minimum of 2 hours.
Haemofiltration: 5ml of sodium glycerophosphate 21.6% (containing 5mmol phosphate) to be added to a 5 litre bag of Hemosol BO or Prismasol 4.

Cautions;
Oral: Monitor levels in acute renal failure.
Intravenous: Ensure patient is well hydrated and monitored particularly if hypercalcaemic because of risk of precipitation of calcium phosphate in kidney and other tissues.

Side Effects;
Oral: Can cause nausea and diarrhoea.
Intravenous: Excessive doses may cause hypocalcaemia

Compatibilities
Intravenous:

**Compatible** with sodium chloride 0.9% or 0.45% and glucose 5% and 10%.

**Incompatible** with Plasma-Lyte, compound Sodium lactate(Hartmann’s solution) and all TPN infusions or fluids containing magnesium or calcium salts.

Monitoring: Monitor serum electrolytes (calcium, phosphate, potassium and sodium); renal function, fluid balance, ECG and blood pressure.

References: Medusa injectable guide Paediatric monograph for phosphate polyfusor (www.injguide.nhs.uk)
BNF for Children 2014-15
Is the addition of phosphate to Continuous Venous-Venous Haemofiltration fluids safe? Andrew Wignall, Molly McLaughlin, Patrick Davies Nottingham Children’s Hospital – PICS oral presentation

QUERIES Contact; PIC pharmacist Ext 27040 / Bleep 2887 or during the evenings and weekends, the on-call pharmacist via switchboard.