

Electrolyte Replacement Guidelines

PROBLEM

TREATMENT

Hypokalaemia
Mild(3-3.5 mmol/L)
Moderate(2.5-3.0 mmol/L)
and asymptomatic

Prescribe oral supplementation if tolerated.

Oral potassium chloride:
0.5-1mmol/kg twice daily initially, adjusted to requirements.

Available as:

Kay-Cee-L liquid (1mmol/ml); Sando-K soluble tablets (12mmol per tablet); Slow K slow release (8mmol per tablet).

If oral supplementation is not possible, use potassium containing maintenance fluids (ready mixed) e.g. 10mmol/20mmol potassium chloride in 500ml sodium chloride 0.9%/glucose 5%

Hypokalaemia
Severe (< 2.5mmol/L),
and/or symptomatic

Prescribe intravenous potassium replacement.

Ensure hypomagnesaemia is also corrected as this will assist in the retention of potassium

Symptoms of hypokalaemia:

ECG changes include flattening of the T wave, appearance of U waves

CENTRAL INTRAVENOUS ADMINISTRATION SHOULD ONLY OCCUR IN AN INTENSIVE CARE SETTING AND AFTER DISCUSSION WITH A SORT CONSULTANT

ONLY USE ready mixed solutions for Intravenous administration

20mmol potassium chloride in 500ml sodium chloride 0.9%

20mmol potassium chloride in 500ml sodium chloride 0.9%/glucose 5%

Maximum infusion concentration/rate:

Peripheral: 20mmol potassium in 500ml.

Maximum rate of infusion is **5ml/kg/hr** = 0.2mmol/kg/hr without ECG monitoring.

Maximum rate of infusion is **12.5mls/kg/hr** = 0.5mmol/kg/hr **with ECG monitoring in HIGH CARE areas only**

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<p>LOW MAGNESIUM Mild (0.5-0.7 mmol/L)</p> <p>Prescribe oral supplementation if tolerated.</p>	<p>Oral magnesium: 0.2 mmol/kg every 8 hours (over 40kg, max dose = 8 mmol)</p> <p>Magnesium glycerophosphate 4 mmol tablets, or 2mmol capsules Magnesium oxide 4 mmol capsules.</p> <p>In hyperphosphataemia use magnesium oxide. Caution: oral magnesium is poorly absorbed and can cause diarrhoea.</p>
<p>LOW MAGNESIUM Severe (<0.5mmol/L) or symptomatic</p> <p>Prescribe intravenous replacement.</p> <p>Symptoms of hypomagnesaemia: Lethargy, confusion, tremor, ataxia, nystagmus, tetany, seizures, ECG changes (prolonged PR & QT intervals)</p> <p>Hypomagnesaemia may contribute to hypokalaemia and hypocalcaemia.</p>	<p>Intravenous magnesium sulphate: 0.2- 0.4 mmol/kg over 2 hours</p> <p>Doses may be given more rapidly over at least 20 minutes BUT ONLY AFTER DISCUSSION WITH SORT CONSULTANT</p> <p>Available as 10% magnesium sulphate (contains 0.4mmol/ml) which may be given either peripherally or centrally. May be used undiluted, or diluted with sodium chloride 0.9% or glucose 5%.</p> <p>IF using 50% magnesium solution, dilute each ml up to 5mls with either 0.9% NaCl or 5% glucose PRIOR to administration</p> <p>Caution: may cause vasodilation and hypotension. Monitor blood pressure during and after infusion</p>

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<p>LOW PHOSPHATE Severe (<0.65 mmol/L)</p> <p>Symptoms: Muscle weakness, paraesthesia, cranial nerve palsy, reduced deep tendon reflexes.</p> <p>In severe cases haemolytic anaemia or rhabdomyolysis can occur.</p>	<p>Intravenous sodium glycerophosphate Available as 21.6% injection containing 1 mmol phosphate and 2 mmol sodium per ml</p> <p>Neonate : 1 mmol/kg 1month–2 years : 0.7 mmol/kg 2-8 years : 0.4 mmol/kg 9-17 years : 10 mmol (NOT per kg)</p> <p>All replacements should be given over 12 hours.</p> <p>Dilute prior to administration with glucose 5% or sodium chloride 0.9%. For peripheral use dilute to 0.02 mmol/ml. For central administration, may be diluted to 0.1 mmol/ml. Do not y-site with any other drugs or infusions</p> <p>Caution: administration of intravenous phosphate to hypercalcaemic patients may result in precipitation of calcium phosphate</p> <p>OTHER hospitals may use different formulations and different precautions may apply</p>

PROBLEM**TREATMENT****Hypocalcaemia****Ionised Ca²⁺ < 1.2 mmol/L****Aim for 1.2-1.3 mmol/L**

Prescribe oral supplementation if tolerated.

Oral Calcium**0-4 years 0.25 mmol/kg four times a day****5-12 years 0.2 mmol/kg four times a day****12-18 years 10 mmol four times a day****Intravenous Dose – For rapid correction of hypocalcaemia**

Dose – 0.5ml/kg of 10% Calcium Gluconate - maximum of 20ml. (**DO NOT** use Calcium Chloride. Calcium Gluconate provides less available calcium than Calcium Chloride and is thus safer to use.)

Preparation of solution – Use as a neat solution. If dilution is required, add to 5% Glucose or 0.9% Sodium Chloride to a concentration of 0.045 mmol/ml (20mg/ml). Mix well. Label clearly. Remove prescribed dose from syringe and label.

Route – **ONLY** via central line with no other infusions in progress.

Rate of administration – Normal maximum rate over 30 minutes. It may be given more rapidly (over 5-10 minutes) in an emergency situation, but only with a doctor in attendance.

Intravenous Dose – When calcium is required as an inotrope infusion via central or I/O line only

Dose - 0-1 month **0.1ml/kg/hour** of 10% Calcium Gluconate

1 month–18 years **0.2ml/kg/hour** of 10% Calcium Gluconate