## Electrolyte Replacement Guidelines

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| **Hypokalaemia**  
Mild (3-3.5 mmol/L)  
Moderate (2.5-3.0 mmol/L)  
and asymptomatic | 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 | **CENTRAL INTRAVENOUS ADMINISTRATION SHOULD ONLY OCCUR IN AN INTENSIVE CARE SETTING AND AFTER DISCUSSION WITH A SORT CONSULTANT** |

**Symptoms of hypokalaemia:**  
ECG changes include flattening of the T wave, appearance of U waves

**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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<td><strong>LOW MAGNESIUM</strong>&lt;br&gt;Mild (0.5-0.7 mmol/L)</td>
<td>Oral magnesium:&lt;br&gt;0.2 mmol/kg every 8 hours (over 40kg, max dose = 8 mmol)&lt;br&gt;Magnesium glycerophosphate 4 mmol tablets, or 2mmol capsules&lt;br&gt;Magnesium oxide 4 mmol capsules.&lt;br&gt;In hyperphosphataemia use magnesium oxide.&lt;br&gt;Caution: oral magnesium is poorly absorbed and can cause diarrhoea.</td>
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<td><strong>LOW MAGNESIUM</strong>&lt;br&gt;Severe(&lt;0.5mmol/L)&lt;br&gt;or symptomatic</td>
<td>Intravenous magnesium sulphate:&lt;br&gt;0.2- 0.4 mmol/kg over 2 hours&lt;br&gt;Doses may be given more rapidly over at least 20 minutes BUT ONLY AFTER DISCUSSION WITH SORT CONSULTANT&lt;br&gt;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%.&lt;br&gt;IF using 50% magnesium solution, dilute each ml up to 5mls with either 0.9% NaCl or 5% glucose PRIOR to administration&lt;br&gt;Caution: may cause vasodilation and hypotension. Monitor blood pressure during and after infusion</td>
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<td><strong>Symptoms of hypomagnesaemia:</strong>&lt;br&gt;Lethargy, confusion, tremor, ataxia, nystagmus, tetany, seizures, ECG changes (prolonged PR &amp; QT intervals)&lt;br&gt;Hypomagnesaemia may contribute to hypokalaemia and hypocalcaemia.</td>
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| **LOW PHOSPHATE**  
Severe (<0.65 mmol/L) | **Intravenous sodium glycerophosphate**  
Available as 21.6% injection containing 1 mmol phosphate and 2 mmol sodium per ml  
Neonate : 1 mmol/kg  
1 month–2 years : 0.7 mmol/kg  
2-8 years : 0.4 mmol/kg  
9-17 years : 10 mmol (NOT per kg)  
All replacements should be given over 12 hours.  
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  
Caution: administration of intravenous phosphate to hypercalcaemic patients may result in precipitation of calcium phosphate  
**OTHER hospitals may use different formulations and different precautions may apply** |
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| Hypocalcaemia  
Ionised Ca\(^{2+}\) < 1.2 mmol/L  
Aim for 1.2-1.3 mmol/L | 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 |

Prescribe oral supplementation if tolerated.

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.  
**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