PHARMACY DEPARTMENT NOTTINGHAM CITY HOSPITAL NHS TRUST

POTASSIUM REPLACEMENT IN HYPOKALAEMIA

Hypokalaemia is defined as a serum potassium below 3.5mmol/Litre. A low serum potassium can affect neuromuscular, cardiovascular and renal function. Symptoms usually become apparent once serum potassium levels fall below 2.5mmol/Litre. However, dysrhythmia can develop when serum potassium falls below 3.5mmol/Litre especially in post-surgery patients.

Oral replacement

Whenever possible, potassium replacement should be by the oral route. In cases of established potassium depletion, **dose of up to 100-200mmol per day may be required**, soluble formulations being the most suitable (Sando K contains 12mmol potassium per tablet). The modified release forms of potassium (slow K), should be avoided at they possess a lower potassium content and have been associated with a risk of oesophageal ulceration. Extreme caution should be exercised in providing potassium replacement in any patient taking potassium-sparing agents (e.g. amiloride).

The dose of oral potassium intake is usually governed by patient acceptability, rather than a maximum daily ceiling. Sando K 2 tablets tds (72 mmols) is a commonly employed regimen in cases of proven depletion.

Parenteral replacement

If the oral route is not suitable (e.g. strict NBM, extreme depletion), the parenteral (IV) route may be employed. The usual recommended peripheral rate of intravenous potassium administration is 10-20mmol/hr, but in urgent cases, 40mmol/hr may be given. It is advisable to use ECG monitoring if rates in excess of 10mmol/hr are given, but this measure may only be appropriate if the ward personnel possess ECG interpretation skills. The serum potassium should be checked after every 80mmol of potassium has been delivered.

The maximum daily replacement should not generally exceed 200-300mmol, (3mmol/kg/day).

The maximum recommended infusion concentration peripherally is 40mmol/Litre but patients may be able to tolerate up to 80mmol/Litre without undue phlebitis occurring.

NB: Care must be taken not to overload the patient with fluid when attempting parenteral potassium replacement. Excessive use of dextrose solutions should be avoided to reduce the risk of dilutional hyponatraemia.

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Availability

The pharmacy department does not provide an IV additive service. **Potassium** chloride 15% (2mmol/ml), 10ml ampoules are only stocked in restricted specialist areas (stored in CD cupboards). Whenever potassium is added to an infusion bag, the contents must be thoroughly agitated to prevent pooling of potassium at the base of the bag. The transfer of stock between wards is not allowed. In all other areas of the hospital, potassium solutions for intravenous administration or dialysis must be prescribed as standard, ready diluted bags. The following standard infusion bags containing potassium are stocked in pharmacy:

Fluid	Potassium	Mmol	volume
Sodium Chloride 0.9%	Potassium Chloride	10	500ml
Sodium Chloride 0.9%	Potassium Chloride	20	1000ml
Sodium Chloride 0.9%	Potassium Chloride	40	1000ml
Sodium Chloride 0.9%	Potassium Chloride	60	1000ml
Sodium Chloride 0.9%	Potassium Chloride	80	1000ml
Sodium Chloride 0.9%	Potassium Chloride	40	500ml
Sodium Chloride 0.9%	Potassium Chloride	40	100ml
Dextrose 5 %	Potassium Chloride	10	500ml
Dextrose 5 %	Potassium Chloride	20	1000ml
Dextrose 5 %	Potassium Chloride	40	1000ml
Dextrose 5%	Potassium Chloride	40	500ml
Dextrose 5%	Potassium Chloride	40	100ml
Dextrose 10%	Potassium Chloride	10	500ml
Dextrose 4%Saline 0.18%	Potassium Chloride	10	500ml
Dextrose 4%Saline 0.18%	Potassium Chloride	20	1000ml
Dextrose 4%Saline 0.18%	Potassium Chloride	40	1000ml
Dextrose 4%Saline 0.18%	Potassium Chloride	20	500ml
Dextrose 5%Saline 0.45%	Potassium Chloride	20	500ml
Dextrose 5%Saline 0.45%	Potassium Chloride	10	500ml

The above guidelines are applicable to the routine ward setting and it should be emphasised that specialist units may employ alternative administration methods, especially when central IV access is available.

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