Title	Potassium Chloride IV Drug Monograph
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Healthcare Inequality Impact Assessed (statutory for policies)	N/R

Reviewed
March 2022 - amendment – Allison Carruthers
2020 – Allison Carruthers
2018 - Allison Carruthers
2014 - Allison Carruthers

Uncontrolled when printed

Form

10ml ampoule containing potassium chloride 15% $^{w}/_{v}$
equivalent to 20mmol potassium (K^+) and 20mmol chloride (Cl^-) (2mmol/ml)

Stored in the Controlled Drug Cupboard on Ward 5, Ward 15 and ITU ONLY,
Every other ward must contact the Pharmacy including the on-call Pharmacist out of hours to discuss why they require concentrated KCl 15%.

POTASSIUM CHLORIDE CONCENTRATE SOLUTION CAN BE FATAL IF GIVEN INAPPROPRIATELY (NPSA)

The use of concentrated potassium ampoules is to be avoided; ready-made potassium chloride solutions should be used wherever possible.
Standard pre-mixed infusion bags available in BGH are shown below:

Strength of potassium chloride	Number of mmol potassium	Infusion fluid	Volume
Potassium chloride 0.15% w/v	20mmol in 1 litre bag	Sodium chloride 0.9% w/v	1 litre
		Glucose 5% w/v	1 litre
		Sodium chloride 0.18% w/v with Glucose 4% w/v	1 litre
	10mmol in 500ml bag	Sodium Chloride 0.9% - **DKA Protocol**	500ml
		Glucose 10% w/v	500ml
		Sodium chloride 0.45% w/v with Glucose 5% w/v Ward 15 only	500ml
Potassium chloride 0.3% w/v	40mmol in 1 litre bag	Sodium chloride 0.9% w/v	1 litre
		Glucose 5% w/v	1 litre
		Sodium chloride 0.18% w/v with Glucose 4% w/v	1 litre
	20mmol in 500ml bag	Sodium Chloride 0.9% - **DKA Protocol**	500ml
		Glucose 10% w/v - **DKA Protocol**	500ml
		Sodium chloride 0.45% w/v with Glucose 5% w/v Ward 15 only	500ml
Potassium chloride 0.6% w/v	**40mmol in 500ml bag**	Sodium chloride 0.9% w/v **Preferred method of administration is via a central line, see further information section below.**	500ml

Diluent

AMPOULES MUST BE DILUTED BEFORE USE
Sodium Chloride 0.9% IV infusion
Glucose 5% IV infusion (Do not administer in glucose if using for treatment of hypokalaemia [(b)]).

Method

Where ready prepared Potassium solutions are not available and if there is a sound clinical reason for KCl 15% to be used for addition to an IV fluid, the nursing staff from the ward must go to

	Ward 5 and make the addition there. NB: Borrowing KCl 15% ampoules between wards **is not allowed under NPSA advice.** In the rare circumstance where additions of potassium chloride are made at ward level, the infusion must be **mixed thoroughly by squeezing and inverting the bag at least 10 times before use** (to avoid pooling of KCL at the additive port). **A second nurse from Ward 5 must witness/check against the prescription for correct product, dosage dilution, mixing and labelling during the preparation of solutions prepared from potassium chloride concentrate (NPSA Alert PSA01 July 02)** **Record the administration details in Ward 5's CD Register.** **Recommended dilution - with not less than 50 times its volume,** **i.e. 20mmol (10ml) of 15% potassium chloride added to 500ml.** **40mmol (20ml) of 15% potassium chloride added to 1000ml**
Administration	IV infusion: Usual rate 10mmol/hour IV infusion for severe depletion and with ECG and biochemical monitoring maximum rate 20mmol/hour. Potassium must be administered via a suitable infusion pump.
Indications For Use and Typical Doses[(a)]	• Hypokalaemia can occur due to increased loss, trancellular shift or decreased intake of potassium. • Mild hypokalaemia is often asymptomatic. (3.0 – 3.5mmol/L) • Severe hypokalaemia usually refers to serum potassium of <2.5mmol/L and can result in muscle necrosis and cardiac arrhythmias. • Potassium administration via the IV route should only be used when the oral or enteral route is not available or will not achieve the required increase of serum potassium within a clinically acceptable time. • As a general rule, a reduction of serum potassium by 0.3mmol/L suggests a total body deficit of 100mmol. • For patients with mild to moderate hypokalaemia who cannot receive treatment via the oral or enteral route, an initial intravenous dose of 20-40mmol/L should be given. • For those with severe/symptomatic hypokalaemia, doses of 40mmol/L or higher are given. • A recommended maximum dose is 2-3mmol/kg of potassium in 24 hours. • This may not need to be replaced over the next 24 hours and indeed this may be inappropriate given the likely infusion volume required for larger patients. The rate of potassium loss should also be considered.
Storage	IV additives prepared outwith the hospital pharmacy aseptic unit, must be **prepared immediately before the dose is given** and remain stable for the length of time required for drug administration. **DO NOT STORE ON WARD** Vials containing injectable medicines must be used to prepare the IV injection for immediate use and then discarded. They must not be stored for further use.
Further Information	• ECG monitoring is RECOMMENDED with RATES EXCEEDING 10MMOL/HOUR. • Continuous ECG monitoring is ESSENTIAL with RATES EXCEEDING 20MMOL/HOUR. • Local pain or phlebitis may occur during IV administration, particularly at higher concentrations, extravasation may cause tissue damage. Too rapid a rate of infusion may cause arrhythmias, paraesthesia, confusion and weakness. • Repeated measurements of serum potassium are necessary to determine whether further infusions are required, and to avoid the development of hyperkalaemia; this is especially liable to occur in renal impairment. In **EXCEPTIONAL CIRCUMSTANCES** Potassium Chloride may be given more concentrated under the direction of a **Senior Clinician** - this may be appropriate in patients with serum potassium less than 2mmol/l with ECG changes &/or a muscle paralysis, or those with life-threatening hypokalaemia induced arrhythmia, or patients in heart failure with a fluid restriction. In these cases: Potassium chloride 0.6% in 500ml Sodium Chloride 0.9% ie. 40mmol/500ml **ready mixed bag** may be used and given over at least 4 hours. Ready mixed bags are available in the Emergency Drug Cupboard and in Ward 5 Omnicell.

	In ITU Potassium Chloride 15% is administered neat via a central venous catheter (dose dependant on requirements of the patient) at a rate of 20mmol/hour. Continuous ECG monitoring is required if the infusion rate exceeds 20mmol/hour or if the infusion concentration is 80mmol/litre or higher.

This is abridged product information. For further details the product data sheet must be referred to or a pharmacist consulted.

Clinical Pharmacy IV Information Sheet

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Prepared by the Pharmacy Department, Borders General Hospital NHS Borders