NHS
County Durham and Darlington
NHS Foundation Trust

Hyperkalaemia in Adults

Dose and Regimen

Serum Potassium level (mmol/L) (reference range = 3.5 to 5.3mmol/L)	Route	Preparation and Dose
MILD = 5.5 to 5.9 mmol/L	N/A	• Check sample is not haemolysed (if so, repeat before commencing treatment) • Consider discontinuing/withholding potassium containing/sparing medicines • Reduce potassium intake • Cardiac monitoring can be considered if symptoms suggestive of hyperkalaemia – seek Consultant advice • Consider Calcium Resonium (see moderate)
MODERATE = 6.0 to 6.4 mmol/L And NO ECG changes or symptoms suggestive of hyperkalaemia Treatment should always be guided by clinical scenario, ECG and rate of rise	Oral	As for mild hyperkalaemia **PLUS** steps below: Calcium Resonium® powder 15g FOUR times a day diluted in 60 to 100mL of water for THREE days unless alternative advice has been given by a nephrologist. (Co-prescribe lactulose 15mL TWICE a day to counter constipating effect of Calcium Resonium) Stop Calcium Resonium therapy when K+5.5mmol/L or over **<u>Cardiac monitoring should be considered – seek Consultant advice. Do not delay treatment if monitoring is unavailable</u>** Recheck potassium daily to prevent hypokalaemia
SEVERE = 6.5 mmol/L and above **<u>OR</u>** Potassium (K+) of 5.5mmol /L or above **and** ECG changes consistent with hyperkalaemia **<u>OR</u>** Potassium (K+) of 5.5mmol /L or above **and** symptoms suggestive of hyperkalaemia are present e.g. Fatigue, weakness, paraesthesia and palpitations especially if associated with hypoxia.	IV and Oral	Treat as for mild **and** moderate **PLUS** steps below: **Continuous cardiac monitoring should be sought whenever possible – seek Consultant advice. Do not delay treatment if monitoring is not immediately available.** **<u>Step 1: Protect the myocardium</u>** Give 10mL of 10% calcium gluconate IV via a large peripheral vein over 5 to 10 minutes. Improvement on ECG should be seen within 1 to 3 minutes. This dose can be repeated at intervals of 10 minutes up to a maximum cumulative dose of 50mL Effects are transient (30-60 minutes) If the patient is taking digoxin the calcium gluconate should be given slowly (mixed with 100mL 5% glucose and given over 30 minutes) to prevent digoxin toxicity. **<u>Step 2: Shift potassium into cells.</u>** IV Infusion (preferred) - Add 10 units of Actrapid insulin to 250mL of 10% dextrose and administer peripherally over 10 minutes. (Please note that the smallest 10% glucose bag available is 500mL – therefore 250mL should be discarded)

		OR Intravenous (IV) Bolus (second line) – Add 10 units of Actrapid to 50mL of Glucose 50% and give IV via a large peripheral vein over 15 to 30 minutes --- If no IV access or resistant hyperkalaemia consider nebulised salbutamol 10 to 20mg over 15 minutes if not tachycardic N.B. If serum glucose above 15mmol/L then give insulin alone Recheck potassium after two hours. Repeat step 2 if K+ still 6.5 or above

Indication for use

- Acute hyperkalaemia in adults (reference range 3.5 to 5.3mmol/L)

REMEMBER: Always establish and treat the underlying cause of hyperkalaemia, **DO NOT** just treat the biochemical abnormality

Presentation

- Calcium gluconate injection 10% (Ca^{2+} 226micromol/ml)
- Actrapid (soluble insulin – human, pyr) 100units/ml x 10ml vial
- Dextrose 10% available as 500ml or 1000ml bags
- Glucose 50% vials 50mL
- Calcium Resonium® (calcium polystyrene sulfonate) powder x 300g tub
- Salbutamol 2.5mg/2.5ml, 5mg/2.5ml nebules x 20 nebules per pack

Method of Administration

- See dosing table above for information

Instructions for Dilution

- See dosing table above for information

Monitoring & Significant Adverse Drug Reactions

Monitoring

- Four hourly observations (temp/pulse/BP/resps/sats) – more frequently if clinically indicated
- Continuous cardiac monitoring if K+ 6.5mmol/L or above
- Recheck serum Potassium at 1, 2, 4, 6, and 24 hours after identification and treatment of hyperkalaemia
- Blood glucose monitoring at baseline,15minutes, 30minutes, 60minutes then at least hourly for a minimum of 6 hours after administration insulin-glucose in all patients

- Monitor fluid balance and encourage good urine output – this will promote urinary potassium loss.
- Urea and electrolytes after 4 to 6 hours then ONCE daily
- Consider checking creatinine kinase (CK) and blood gases if appropriate
- If the patient is on dialysis ensure the renal team are informed.
- If required please refer to trust Advanced Life Support (ALS) guidelines

Course lengths should be based on the clinical indication for use and stop dates added to the drug chart. If a patient is to be discharged before a course is completed then the GP must be given explicit information regarding monitoring and future management.

Refer to the most recent version of the British National Formulary (BNF) for a full and up to date list of side effects

References

- UK Renal Association. Treatment of Acute Hyperkalaemia in Adults. March 2014
- GAIN. Guidelines for the treatment of hyperkalaemia in adults. August 2014
- Nottingham University Hospitals NHS Trust. Guideline for the management of Acute Hyperkalaemia in Adults. April 2016
- Gloucestershire Hospitals NHS Foundation Trust. Guidelines for the Emergency Treatment of Hyperkalaemia. February 2016