

EMERGENCY TREATMENT OF SEVERE HYPERKALAEMIA

(Serum K⁺ ≥ 6 mmol/L)

<p style="text-align: center;">GUIDANCE AND BLOOD GLUCOSE MONITORING CHART (NOT TO BE USED FOR THE TREATMENT OF DKA, HHS OR POORLY CONTROLLED GLYCAEMIA)</p> <p style="text-align: center;">Hyperkalaemia can lead to arrhythmias and cardiac arrest.</p>	Surname: First name: Hospital Number: NHS Number: DOB: <i>Affix patient label here</i>
Dept/ Ward:	
Date:	Consultant:

Investigations

- 12-lead ECG to be done at the earliest opportunity if serum K⁺ ≥ 6 mmol/L
- Repeat U&Es – do not delay treatment if ECG changes present
- FBC and serum bicarbonate
- Fluid balance assessment
- Medical history – risk factors for hyperkalaemia (eg. AKI, dialysis dependency, CKD stages 4 & 5, cardiac failure, diabetes mellitus, liver disease, Addison's disease)
- Review drug chart for medication causes; eg ACE inhibitors, Angiotensin II inhibitors, Entresto (Sacubitril / Valsartan), K sparing diuretics (e.g. spironolactone, eplerenone), NSAIDs, trimethoprim, and dietary K supplements

Treatment

STEP 1: Protect The Heart

<p style="text-align: center;">ECG changes e.g. flat/absent P waves, peaked T waves, broad QRS, sine-wave or K⁺ > 6.9 mmol/L</p>	<ul style="list-style-type: none"> <input type="checkbox"/> 30ml of calcium gluconate 10% IV over 10 minutes into a large vein - <input type="checkbox"/> Repeat ECG and assess the response. If no effect within 5-10 minutes, repeat dose. Duration of action is 30-60 minutes, therefore repeated doses may be necessary if hyperkalaemia remains uncontrolled. <p>If on Digoxin: 30ml calcium gluconate 10% over 20 minutes in 100 ml of glucose 5% (rapid administration may precipitate or worsen digoxin toxicity)</p>
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STEP 2: Lower The Potassium (K⁺ lowering treatment differs for dialysis patients and should be discussed with the renal team)

MILD Serum K ⁺ 5.5 - 5.9 mmol/L	MODERATE Serum K ⁺ 6.0 – 6.4 mmol/L	SEVERE Serum K ⁺ ≥ 6.5 mmol/L or oligo-anuric
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Monitor serum K⁺ and identify and treat the cause	CONSIDER EARLY RENAL REFERRAL AND/OR ACUTE CARE TEAM
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Administer insulin and dextrose early as follows and treat the cause:

Is the patient fluid overloaded?	
<p>If NOT fluid overloaded:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Prescribe 10 units Actrapid insulin IV with 500ml 10% glucose IV over 30mins <p><small>Please use a 100 unit 29G x 13mm insulin syringe when preparing</small></p>	<p>If fluid overloaded (or at risk of fluid overload):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Prescribe 10 units Actrapid insulin IV with 50ml 50% glucose IV and give over 15 mins into a large vein

Give 10% glucose @ 50 ml/hr for 5 hours (25g) if pre-treatment blood glucose < 7.0 mmol/l

- Recheck potassium – Actrapid/glucose infusion has a short-lived effect and may require repeat dosing.
- Monitor patient's blood glucose levels overleaf**

Acidosis	Salbutamol nebulisers	Lokelma (Sodium zirconium cyclosilicate)
If serum bicarbonate < 22mmol/L and the patient is not fluid overloaded, prescribe 500ml of 1.26% sodium bicarbonate solution over 2-4 hours . Then re-check potassium	A single (10 or 20mg) dose may be used to augment intracellular shift of potassium. Less effective if concurrent β -blockade. Monitor for increase in heart rate. Caution if ischaemic heart disease	Prescribe Lokelma 10g TDS orally as a suspension in water . Begins to lower K ⁺ after 1 hour. Continue until K ⁺ is normalised or for a maximum of 72 hours. Stocked in Mayflower, ICU & ED if required out-of-hours.

Emergency Treatment of Severe Hyperkalaemia

File in Medical notes with Nursing Record

HRDM No. 0634/3 Oct 2023

Monitoring

- Monitor plasma U&Es 2 hourly until K stable **and** < 6.0 mmol/L.
- Important:** Attend to underlying cause of increased potassium. Optimise fluid balance. Review medication chart

BLOOD GLUCOSE MONITORING FOR PATIENTS ADMINISTERED ACTRAPID/GLUCOSE INFUSION

Pre-administration Capillary Glucose

Date	Blood glucose (mmol/L)	Result	Action
		< 4 mmol/L	Discuss with medical staff urgently before infusion
Time:		4 – 16 mmol/L	Proceed with standard infusion
		> 16 mmol/L	Discuss urgently with medical staff before infusion

Post infusion blood glucose monitoring

Glucose should be monitored at 15, 30, 60, 90 minutes after the infusion and again at 2, 3, 6, 8 and 12 hours. Beware of hypoglycaemia during and after infusion

Time post infusion:	15 min	30 min	60 min	90 min	2 hours	3 hours	6 hours	8 hours	12 hours
Date:									
Time:									
Blood Glucose: (mmol/L)									
Sign:									
Print Name:									

If blood glucose result < 4mmol/L contact medical staff immediately and follow Acute Hypoglycaemia guidelines (on Healthnet)

In the presence of severe or persistent hyperkalaemia, and/or K-related ECG changes, and/or deteriorating renal function (poor urine output, or persistent rising creatinine, or acidosis), consider EARLY RENAL REFERRAL for possible dialysis