

Date : ____/____/____

Write in CAPITAL LETTERS or use addressograph

Surname: _____

First names: _____

H&C number: _____

DOB: _____

Mandatory Blood Glucose Monitoring following insulin and glucose to treat hyperkalaemia

Time sample taken (24hr)	Monitoring schedule	Capillary glucose (mmol/L)	K ⁺ (mmol/L)
____:____	Baseline		
____:____	15 min		
____:____	30 min		
____:____	60 min*		
____:____	90 min		
____:____	2 hr		
____:____	3 hr		
____:____	4 hr		
____:____	6 hr		
____:____	8 hr		
____:____	12 hr		

Advice on potassium monitoring

1. Insulin, glucose and salbutamol normally lower K⁺ by ~1.0mmol/L at 60 min

2. An urgent K⁺ level at 60 min post-treatment* informs acute monitoring, specifically:

- Point of Care Test (POCT) analysers do not detect spurious hyperkalaemia (cell lysis) but provide reassurance in the emergency setting if reporting a K⁺ <6.0mmol/L
- If relying on an urgent U&E lab sample for the 60 min K⁺ test, the result should ideally be available within 1 hr to inform management
- A K⁺ <6.0mmol/L at 60 min on a POCT or lab test indicates a safe initial response. In such instances, check K⁺ again in 3 hr (i.e. 4 hr post treatment) on a lab sample, **not** a POCT (unless no alternative)
- If K⁺ 6.0-6.4mmol/L at 60 min on a POCT then check on an urgent U&E lab sample. If K⁺ confirmed between 6.0-6.4mmol/L, send another urgent lab sample in 2 hr to determine the trend and discuss these results with senior member of staff

3. Tests beyond 4 hr are to detect rebound / recurrent hyperkalaemia. In acutely unwell patients (e.g. high NEWS, hypoxia) tests at 6, 8 and 12 hr are advisable; in stable cases tests at 8 and 24 hr may suffice. Discuss monitoring frequency with a senior member of staff.

If K⁺ ≥6.5mmol/L on ANY follow-up test (unless strongly suspecting a spurious result)

- Repeat an ABCDE assessment
- Start a NEW monitoring form
- Complete steps 1-6 of the treatment algorithm
- Discuss with nephrology as by definition this is *resistant or recurrent hyperkalaemia*



MONITORING (Key Roles and Responsibilities)

MEDICAL STAFF	NURSING STAFF
Monitor and record potassium levels in the table provided and sign off on ECR	Monitor and Record blood glucose in the table
	Contact the doctor looking after the patient or the on-call doctor if informed of any repeat K ⁺ ≥6.5mmol/L.

Management of Hyperkalaemia in Adult Inpatients

$K^+ \geq 6.0 \text{ mmol/L} \Rightarrow$ Perform urgent ABCDE assessment & 12-lead ECG

Monitor via telemetry (if available) patients with $K^+ 6.0 - 6.4 \text{ mmol/L}$ AND AT RISK of a sudden rise in potassium*

Telemetry monitoring is essential FOR $K^+ \geq 6.5 \text{ mmol/L}$ OR when $K^+ 6.0 - 6.4 \text{ mmol/L}$ is associated with hyperkalaemic ECG changes

Mild hyperkalaemia
 $K^+ 5.5 - 5.9 \text{ mmol/L}$

Moderate hyperkalaemia
 $K^+ 6.0 - 6.4 \text{ mmol/L}$

Life-threatening hyperkalaemia
 $K^+ \geq 6.5 \text{ mmol/L}$



DISCUSS WITH A SENIOR DOCTOR

Are there ECG changes OR symptoms DUE TO hyperkalaemia?
If YES \Rightarrow DISCUSS WITH A SENIOR DOCTOR & treat as Life-threatening

ECG Changes (in order of severity)

- Peaked T waves
- PR prolongation
- Decreased amplitude or absent P waves
- QRS widening
- AV block

NO \downarrow

Plan monitoring based on the risk of sudden rise in potassium*

*Acutely unwell patient (e.g. high NEWS, hypoxia) \Rightarrow *repeat at 2hr*

Stable patient (e.g. chronic RAASi use, within 0.5 mmol/L of a chronic baseline value) \Rightarrow *repeat at 8-12 hr*

$K^+ < 6.5 \text{ mmol/L}$

$K^+ \geq 6.5 \text{ mmol/L}$

Continue monitoring

STEP 1: Protect the Heart

10ml 10% IV Calcium Gluconate over 5 mins
**If on digoxin give over 20mins **

STEP 2: Check Capillary Blood Glucose (CBG)

STEP 3: Move Potassium Into Cells

a) Administer Insulin and Glucose Bolus:
10 units ACTRAPID insulin & 50ml of 50% Glucose IV over 5 minutes
b) Stat Salbutamol: 10mg Nebulised

CBG $< 7 \text{ mmol/L}$

CBG $\geq 7 \text{ mmol/L}$

STEP 4: Protect against Hypoglycaemia

Start a 25g Glucose Infusion:
250mls of 10% Glucose @50ml/hr

STEP 5: Minimise Rebound Hyperkalaemia

As Per local guidance consider a NICE approved potassium binder alongside standard care (steps 1-4). *Do not use calcium resonium*

STEP 6: Intensive monitoring (reverse page)

Plan monitoring based on the risk of sudden rise in potassium*

*Acutely unwell
Repeat <12 hr

Stable patient
Daily monitoring

ESSENTIAL MANAGEMENT STEPS IN ALL CASES OF HYPERKALAEMIA ($K^+ \geq 5.5 \text{ mmol/L}$)

- **REDUCE INTAKE:** Start a low potassium diet and stop any potassium supplements (e.g. Sando-K)
- **REVIEW KARDEX:** When safe to do so, hold RAAS inhibitors (Spironolactone, ACEi/ARB/Entresto), trimethoprim, co-trimoxazole, potassium sparing diuretics and NSAIDs. Treat any constipation. *Exclude digoxin toxicity if indicated*
- **MANAGE AKI:** If present, manage AKI as per GAIN AKI Guidelines (link to guidance via NIECR AKI e-Alert)
- **CORRECT ACIDOSIS:** If $\text{HCO}_3^- < 20 \text{ mmol/L}$ and $K^+ \geq 6.0 \text{ mmol/L}$ discuss with Nephrology
- **EXCLUDE PSEUDOHYPERKALAEMIA:** Spurious hyperkalaemia results from cell lysis: e.g. delayed sample processing / platelet count > 750 / WCC > 20 . Exclude by repeating potassium on paired lithium heparin and clotted serum samples

*Within the appropriate clinical context consider Addison's and tissue breakdown (burns/tumour lysis/rhabdomyolysis).

INDICATIONS FOR SPECIALIST REFERRAL (NEPHROLOGY/CLIN. BIOCHEM)

1. Moderate hyperkalaemia ($K^+ \geq 6.0 \text{ mmol/L}$) and severely impaired renal function (creatinine $> 350 \mu\text{mol/L}$)
2. Resistant or recurrent severe hyperkalaemia ($K^+ \geq 6.5 \text{ mmol/L}$ despite treatment or recurring $\geq 6.5 \text{ mmol/L}$ within 24 hr)
3. Severe hyperkalaemia in a dialysis patient ($K^+ \geq 6.5 \text{ mmol/L}$ and on haemodialysis or peritoneal dialysis)
4. Moderate hyperkalaemia ($K^+ \geq 6.0 \text{ mmol/L}$) and significant metabolic acidosis ($\text{HCO}_3^- < 20 \text{ mmol/L}$)