ACUTE HYPERKALAEMIA MANAGEMENT
GUIDELINE

Hyperkalaemia: mild 5.5-6mmol/L; moderate 6.1-6.9mmol/L; severe >7mmol/L
If the serum potassium is > 6 urgent measures should be taken to correct hyperkalaemia.
Treatment of hyperkalaemia must be individualised. The risk of complications, including arrhythmias is variable and difficult to define.

STEP 1:
- Ensure continuous non-invasive cardiorespiratory monitoring of the patient, and appropriate nursing and medical care. Advise the Registrar In Charge AND/OR the Emergency Physician on duty

- Perform an ECG to assist in determining the level of danger for the patient: Look for peaked, narrow based T waves, broadening of the P wave, widening of the QRS complex, and finally a broad sinusoidal pattern. The degree of hyperkalaemia does not always correlate with ECG changes.

STEP 2: Prior to commencing treatment
-repeat the sample; do not wait for the result to commence treatment; this is simply to confirm the result is not spurious and to give information regarding the rate of rise of the potassium. The departmental gas machine can be used to obtain a STAT potassium result

STEP 3: Categorise the risk and treat.
Any of the following factors increase risk
- ECG changes
- K >/= 6.5mmol/L, acute increase
- Pre-existing cardiac disease
- Other electrolyte abnormalities
- oliguria

IN THE HIGH RISK PATIENT: discuss the role of the following agents with senior staff
- To protect the myocardium:
  - Calcium gluconate 1g/10ml iv over 2-3min; (except if digoxin toxicity suspected or hypercalcaemia); equivalent to 2.2mmol calcium; may be repeated if no effect in 5-10min. Onset action 1-5min; duration 30-60min. Calcium does not affect potassium levels.

- To push potassium back into the cells
  - Ventolin nebuliser 10mg
    Caution in patients with IHD. Onset of action within 15 minutes with duration of action 2-6 hours. Ineffective in patients on B Blockers
    Usual fall in potassium 0.5-1mmol/L. Synergistic effect with
glucose/insulin. May be ineffective if used alone in 12-40% of patients. Also acts to minimise the hypoglycaemic effect of insulin. Consider intravenous salbutamol 500micrograms slowly over 20min.

AND

- **Intravenous dextrose** 25g-40g (50-75 ml 50% dextrose) followed by 5-10 units actrapid iv (may be mixed together);
  - the insulin dose should be charted on the grey insulin prescription chart;
  - the bolus dose of dextrose should be followed by a dextrose infusion in the setting of renal failure as the duration of action of the short acting insulin is likely to be prolonged.
- **Measure the BSL after 15 minutes and then Hourly BSLs should be recorded for the next 6-12 hours as hypoglycaemia may be delayed in the setting of renal failure.**
  - Onset of action in 15-30 mins and duration of action usually 2-6 hours. Typical fall in potassium usually 0.5-1.5mmol/L

CONSIDER
If the patient is acidotic with a pH<7.2, consider giving **sodium bicarbonate** 25-100ml 8.4% intravenously over 5-15 minutes. Use with caution in sodium overload. No effect for at least 60 minutes.

AND/OR

- **Increase potassium excretion**
  - **From the gut:** Resonium a cation binder in the GIT. Use as a powder mixed with water (not juice).
    - The usual dose is 15-30g orally, 30-60g rectally. This can be repeated every 6-8 hours if the cause of hyperkalaemia is not resolved.
    - Give rectally as a retention enema (left in situ for 60 minutes) if the patient is NBM or orally.
    - limited efficacy and delayed action.
    - Cease the resonium when the K < 5 as the level may continue to fall for 1-2 days after resonium is ceased
  - **Renally:** **haemodialysis:** the most definitive measure. Required when severe hyperkalaemia persists despite appropriate management

STEP 4: Seek and address the cause aiming to restore renal function
- Correct volume depletion
- Consider blood pressure support to optimise renal perfusion
- Catheterise the patient and consider the need for urgent renal US to exclude renal obstruction
- Consider the use of a loop diuretic to increase urinary potassium loss
- If hyperkalaemia and renal failure occur together, consider the need for urgent dialysis
- Consider the need to involved the renal service urgently
- Frequently monitor the serum potassium
IN THE LOW RISK PATIENT
Consider resonium alone

In chronic hyperkalaemia: consider medication review, dietary modification, diuretic if oedematous, oral bicarbonate if acidotic

SEE OVER FOR MANAGEMENT OF THE PAEDIATRIC PATIENT

References:
-Howlin K. SWAP Stimulus Nov/Dec 2002
In the paediatric patient refer to The APLS Manual: The Practical Approach 4th Edition page 293
Algorithm below

**ARRHYTHMIA**

- **CALCIUM**
  - 0.1 mmol/kg IV

- **NO**
  - Consider specific arrhythmia protocol

- **Nebulised salbutamol**
  - 2.5 – 10 mg

- **Repeat serum potassium**

- **After bicarbonate**
  - **Assess pH**
    - <7.34
    - >7.35

- **Calcium Resonium**
  - 1g/kg PO or PR

- **Dialysis if necessary**

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<tr>
<th>Age (years)</th>
<th>Salbutamol dose (mg)</th>
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<tbody>
<tr>
<td>&lt;2.5</td>
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<tr>
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<tr>
<td>&gt;7.5</td>
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