

HYPERKALAEMIA – MANAGEMENT OF

This LOP is developed to guide clinical practice at the Royal Hospital for Women. Individual patient circumstances may mean that practice diverges from this LOP.

1. AIM

To ensure the safe management of patients with hyperkalaemia.

2. PATIENT

A woman with a serum potassium greater than 5.5mmol/L.

Patients with serum potassium greater than or equal to 5.5mmol/L are to be transferred to Acute Care for monitoring and treatment.

3. STAFF

Nursing, midwifery and medical staff

4. EQUIPMENT

ECG machine

5. CLINICAL PRACTICE

MONITOR THE PATIENT USING:

- 12 lead ECG dependent on physician orders and clinical condition
- Serum potassium level every two hours until the level is less than 5.5mmol/L
- Continuous cardiac monitoring
- Observations determined by clinical condition

Blood sampling: Urgent serum potassium can be taken by RMO or nursing staff in an ABG syringe and processed through the GAS machines in SEALS and in Newborn Care Centre. This should then be followed with a formal SEALS blood sample and result. All blood samples are to be marked life threatening and the results requested to be uploaded onto EMR urgently. A hardcopy of the results should be placed into the patient's notes.

TREATMENT AIMS

- Administer intravenous calcium for cardiac membrane stabilisation (only to be given if widened QRS or sine wave pattern)
- Drive potassium into cells via a glucose and insulin infusion
- Eliminate potassium from the body via administration of sodium polystyrene sulfonate (RESONIUM A)

SERUM POTASSIUM GREATER THAN 6 MMOL/L

Administer calcium to stabilise cardiac membranes and prevent arrhythmias if ECG changes are present - this will not reduce serum potassium. Administer either:

- Calcium chloride 10% 10mL (= 1g or 7 mmol) IV over 2 to 3 minutes into a large vein (with ECG monitoring)- to be administered by an anaesthetist
OR
- Calcium gluconate 10% 10mL (=1g or 2.2 mmol) IV over 2-3 minutes into a large vein (with ECG monitoring)- to be administered by an anaesthetist.

CLINICAL POLICIES, PROCEDURES & GUIDELINES

Approved by Quality & Patient Care Committee
7 July 2016

HYPERKALAEMIA – MANAGEMENT OF cont'd

Administration of insulin causes potassium to shift into the cells and temporarily lowers the plasma concentration. This causes the serum potassium to decrease by 0.5 to 1.5 mmol/L over 30 minutes.

- Short-acting insulin (ACTRAPID) 10 units IV bolus PLUS glucose 50% 50ml IV over 5 minutes via a CENTRAL line

OR

- Add 10 units of short- acting insulin (ACTRAPID) to 50ml of glucose 50% and infuse over 30 minutes via a PERIPHERAL line

Measure and document blood glucose levels (BGL) every 30 minutes for two hours. If the BGL is stable, measure and document BGL every 60 minutes for four hours

Administer a sodium bicarbonate infusion if correction of metabolic acidosis is required.

- Sodium bicarbonate 8.4% (= 1 mmol/ml) 50 ml IV over 5 to 10 minutes (with ECG monitoring). This may be repeated in 60 to 120 minutes

Restoration of normal hydration status may need to be continued with sodium chloride 0.9%

Administer ion exchange resins to remove potassium from the GI tract to reduce the body's overall potassium load.

- Sodium polystyrene sulfonate (RESONIUM A) 15 g (suspended in 45 to 60 ml of water) orally, 3 or 4 times daily

OR

- Sodium polystyrene sulfonate (RESONIUM A) 30 to 50 g (suspended in 150 ml of water or 10% glucose) rectally as a retention enema, daily. The enema should be retained, if possible, for at least 9 hours after which the colon should be irrigated to remove the resin.

Each gram of resin removes around 1 mmol of potassium and delivers 2 to 3 mmol of sodium. This treatment lowers the serum potassium concentration by 0.5 to 1 mmol/L over 1 to 6 hours.

- Perform a medication review to cease drugs which may cause or aggravate hyperkalaemia (see educational notes).

SERUM POTASSIUM 5.5– 6.0 MMOL/L, NO ECG CHANGES OR PEAKED T WAVES ONLY

- Administer sodium polystyrene sulfonate (RESONIUM A) as described above.
- Perform a medication review to cease drugs which may cause or aggravate hyperkalaemia (see educational notes).

REFERRAL

Seek advice from the following personnel If further information is required with regards to the monitoring and treatment for a patient with hyperkalaemia.

- Physician in hours and after hours and see on call roster on weekends.
- Intensive Care Registrar – pg 44181 or ICU ext 24701
- Medical Registrar (in hours) –pg 46748
- Renal Registrar (page through POWH switch ext 21903)

6. DOCUMENTATION

Integrated Clinical Notes
Medication Chart
Fluid chart

CLINICAL POLICIES, PROCEDURES & GUIDELINES

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7. EDUCATIONAL NOTES

Clinical features of hyperkalaemia are demonstrated through ECG changes including:

- Peaking of the T waves
- Prolongation of the PR interval and flattening P wave
- Widening of the QRS complex
- Ventricular fibrillation/asystole

Signs and symptoms of hyperkalaemia:

- Muscle weakness
- Flaccid paralysis
- Bradycardia
- Hypotension

Causes of hyperkalaemia:

- Pseudohyperkalaemia-(mechanical release of potassium from cells during phlebotomy procedure or specimen processing)- consider rechecking specimen if normal ECG and no risk factors for hyperkalaemia.
- Medications – Potassium supplements, Potassium sparing diuretics (eg amiloride, spironolactone), ACE Inhibitors (eg ramipril, lisinopril) and Angiotensin II blockers (eg irbesartan, candesartan)
- Acute/ chronic renal failure.
- Acidosis – hyperkalaemia is a common manifestation of acidosis and will often resolve with correction
- Severe tissue damage

8. REALTED POLICIES/ PROCEDURES/ CLINICAL PRACTICE LOP

Acute Care: Admission Criteria, Process and Management Guideline

9. RISK RATING

High- every 2 years

10. NATIONAL STANDARD

Medication Safety

11. REFERENCES

1. Ahee, P., Crowe, A. (2000). The management of hyperkalaemia in the emergency department. *Emergency Medicine Journal*, volume 17, pp 188-91
2. Huszar, R.J. (1998) *Basic Dysrhythmias* (2nd Ed) St Louis: Mosby Lifeline
3. Therapeutic Guidelines: Endocrinology, June 2009. Accessed via CIAP online 12/5/16
4. MIMS online. *Mims.hcn.net.au*
5. Policy for management of hyperkalaemia. *St George Hospital Renal and Hypertension Unit.*
6. Timmins, J. (2004). *Clinical Practice Guidelines; Treatment of Hypokalaemia and Hyperkaleamia*

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