

Subject: Management of Hyperkalaemia in patients with kidney failure
2nd Edition

Objective: To standardize and improve the management of hyperkalaemia in patients with kidney failure. For trust-wide use after discussion with on call nephrology team

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Introduction / Background

Hyperkalaemia is a life-threatening condition that can be particularly difficult to manage in patients who have co-existing kidney failure. Failure to identify and manage such patients appropriately and in a timely fashion can and will increase the risk to the patient, including the risk of death.

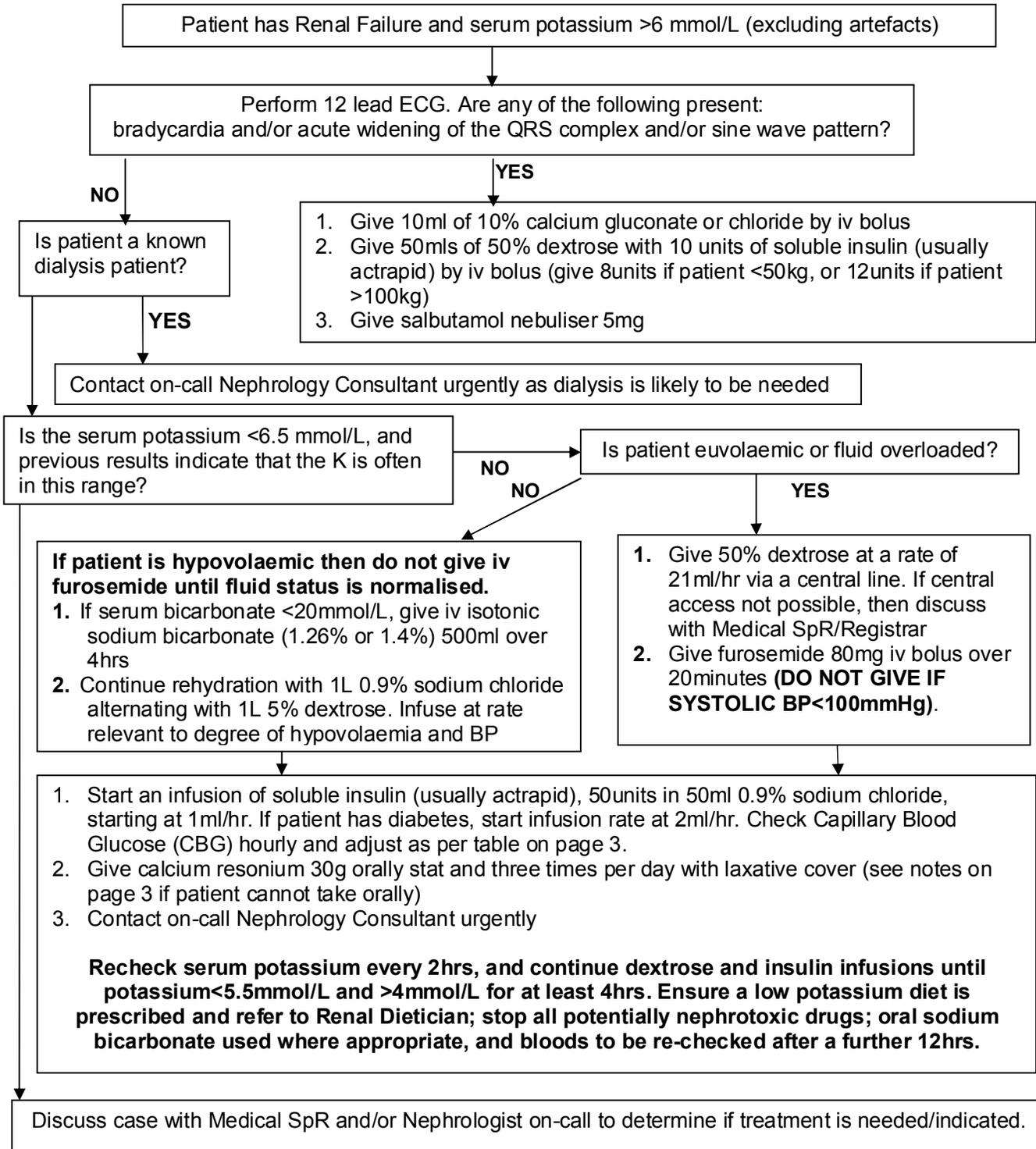
Management of patients with hyperkalaemia without renal/kidney failure does not fall under the guidance of this document.

ONLY IF A PATIENT HAS RENAL FAILURE (AS DEMONSTRATED BY SERUM UREA AND CREATININE LEVELS) AND HAS HYPERKALAEMIA SHOULD THESE GUIDELINES BE FOLLOWED

(FOR PATIENTS WITH HYPERKALAEMIA AND NORMAL KIDNEY FUNCTION – FOLLOW THE GUIDELINES ON SEVERE METABOLIC EMERGENCIES ON THE INTRANET)

Guidelines for the Management of Hyperkalaemia in Patients with Kidney Failure

50% dextrose and 10% calcium solutions are hypertonic and will result in severe phlebitis if extravasation occurs: If either of these agents is required, then consider placing a central venous catheter (ideally an internal jugular line) where time and the patient's clinical condition allows:



Duties and Responsibilities

The attending doctor must either implement the management plan themselves and review the patient regularly (at least every 15 minutes for the first hour), or ensure that the appropriate handover has taken place to provide safe continuity of care for the patient.

The attending doctor must ensure that the nursing staff are aware of the management plan, and any trigger factors that they must make someone aware of (e.g. what level of blood pressure should be a cause of concern for any specific patient).

The attending doctor should seek advice from the Medical SpR on-call, who in turn should consider discussing the case with the on-call Consultant Nephrologist. The attending doctor may contact the on-call Consultant Nephrologist directly if they are unable to contact the SpR. All anuric patients with renal failure must be discussed with the Consultant Nephrologist on-call.

The nursing staff must ensure that they are aware of the management plan for the patient, frequency of relevant observations, and escalation plan for management.

Calcium Resonium

This takes at least 3-hours to start having any effect, and can take up to 6-hours. It is most effective when taken orally, usually prescribed 15g three times a day, but is normally prescribed with laxatives because of the tendency for it to cause severe constipation. An initial dose of 30g should be prescribed as tolerated by the patient.

If the patient cannot take the medication orally, then calcium resonium can be given rectally. However, apart from the obvious reduced patient acceptance of a rectal vs. an oral preparation, it is less effective rectally compared to orally. It can be given as a 30g enema, and should remain in place for at least 6-hours to have its maximum effect. It can be repeated after 6-hours, but only if the first enema has been excreted/removed: **DO NOT GIVE A REPEAT CALCIUM RESONIUM ENEMA IF THE FIRST ONE IS STILL IN PLACE.**

Insulin Regimen

| *CBG (mmol/L) | Rate of insulin infusion (mL/hour) |
|---------------|--|
| <4 | Reduce rate by 0.5 mL/hour. Recheck CBG after 30 minutes. DO NOT STOP INSULIN IF PATIENT HAS TYPE I DIABETES – CONSULT DIABETES SPECIALIST ON-CALL |
| 4-11 | Continue at the same rate. Recheck CBG after 1 hour. |
| >11 | Increase rate by 0.5 mL/hour. Recheck CBG after 30 minutes. If CBGs persist at >11 mmol/L discuss with on-call diabetes specialist |

*CBG=Capillary Blood Glucose

Monitoring Effectiveness

Episodes of hyperkalaemia are inevitable in some patients with Acute Kidney Injury. This guideline will not prevent such episodes, but should facilitate timely management of such episodes.

Annual audits of the management of AKI will be undertaken as part of the response to the NCEPOD report on AKI. We will include in these audits the duration of hyperkalaemia post-diagnosis of AKI, and record from the notes any indication of the use of the guideline.

References

Allon M. et al. Effects of insulin-plus-glucose infusion with or without epinephrine on fasting hyperkalaemia. *Kidney Int* 1993;43:212

Blumberg A. et al. Effect of various therapeutic approaches on plasma potassium and major regulatory factors in terminal renal failure. *Am J Med* 1988;85:507

Rose B.D. et al. *Clinical Physiology of Acid-Base and Electrolyte Disorders*, 5th ed, McGraw-Hill, New York 2001, pp 913-919