POTASSIUM LOWERING TREATMENTS IN CHRONIC KIDNEY DISEASE / HEART FAILURE – GUIDANCE NOTES

TARGET AUDIENCE	Board wide
PATIENT GROUP	Patients with Chronic Kidney Disease and/or heart failure

Clinical Guidelines Summary

- Patiromer (Veltassa) or Sodium Zirconium Cyclosilicate (Lokelma) are recommended as options in the management of persistent hyperkalaemia in patients with CKD stage 3b-5 or heart failure receiving a sub-optimal dose of RAASi therapy

Potassium lowering treatments in CKD / Heart Failure

Patiromer (Veltassa) and Sodium zirconium cyclosilicate (SZC) (Lokelma) are gastrointestinal cation exchangers which can be used for control of hyperkalaemia. These offer an alternative to binders such as Calcium Resonium, which is associated with serious gastrointestinal adverse effects and is highly unpalatable.

Suboptimal dosing of RAASi / MRA is associated with worse cardiovascular outcomes and higher mortality in patients with CKD and/or HF compared to optimal dosing.
Potassium lowering treatments may allow optimisation of RAASi dosing.

The evidence base for these medicines demonstrates improvements in serum potassium, but not extended or improved quality of life. Use of these medicines may allow patients to remain on medicines which have already been demonstrated to improve quality of life or extend life.

Clinicians may opt to use Patiromer (Veltassa) or SZS (Lokelma) at their discretion – there is no recommended preference.

<u>SMC restriction for Patiromer (Veltassa):</u>

Patients with hyperkalaemia (defined as a serum potassium of >6.0mmol/L) with chronic kidney disease (CKD) stage 3b to 5 and/or heart failure, who would otherwise need to down-titrate or discontinue their renin-angiotensin-aldosterone system inhibitor (RAASi) therapy to maintain a clinically acceptable serum potassium level (normokalaemia); and in the emergency care setting for the treatment of acute, life-threatening hyperkalaemia alongside standard care (see separate guideline for acute hyperkalaemia treatment)

Patiromer sorbitex calcium offers an additional treatment choice in the therapeutic class of non-absorbed cation-exchange compounds that act as selective potassium binders

<u>SMC restriction for SZC (Lokelma):</u>

Patients with hyperkalaemia (defined as a serum potassium of >6.0mmol/L) with chronic kidney disease (CKD) stage 3b to 5 and/or heart failure, who would otherwise need to down-titrate or discontinue their renin-angiotensin-aldosterone system inhibitor (RAASi) therapy to maintain a clinically acceptable serum potassium level (normokalaemia); and in the emergency care setting for the treatment of acute, life-threatening hyperkalaemia alongside standard care (see separate guideline for acute hyperkalaemia treatment)

Sodium zirconium cyclosilicate, compared with placebo, reduced serum potassium in two and four-week studies in adults with hyperkalaemia. In an uncontrolled one-year study sodium zirconium cyclosilicate produced normal serum potassium in a proportion of adults with hyperkalaemia.

Patiromer (Veltassa)

Patiromer (Veltassa) is a polymer that exchanges potassium for calcium ions.

Patiromer (Veltassa) is recommended as an option in the management of persistent hyperkalaemia with serum K>/= 6.0 mmol/L in outpatients with CKD 3b-5 (not on dialysis) or heart failure receiving a sub-optimal dose or not receiving RAASi due to hyperkalaemia (UK RA CPG)

Patiromer should be discontinued if RAASi is stopped (UK RA CPG)

Patiromer should be initiated in secondary care only (UK RA CPG)

Patients should be instructed not to discontinue therapy without consulting their healthcare professional, and should be advised to seek help promptly if they experience difficulties in obtaining these medicines in the community (e.g. pharmacy shortage / supply problems)

Onset of action 4-7 hours.

Dose and preparation

8.4 g once daily

Increase in 8.4g increments at intervals of 1 week or more

Maximum dose 25.2 g per day

Manufacturer advises take 3hrs before or after other drugs (concomitant administration may reduce bioavailability of other drugs)

Combine powder as per instruction, stir thoroughly to form a cloudy mixture (powder will not dissolve), and drink immediately

Do not heat or add to heated foods or liquids

Monitoring

Timing and frequency of monitoring patients on these medicines should be clearly considered and planned in secondary care, with the responsibility to ensure safe monitoring (and dose titration) resting with the initiating clinician in secondary care. Monitoring should be determined on a case by case basis.

Adverse effects

Gastrointestinal adverse effects (constipation, diarrhoea, nausea, abdominal discomfort, and flatulence) are the most common

Hypomagnesaemia – magnesium should be monitored, for at least one month after initiation of treatment

Cautions

Risk factors for hypercalcaemia (Patiromer contains calcium), severe GI disorders
No specific drug interactions.

Avoid in pregnancy / breastfeeding

Sodium Zirconium Cyclosilicate (SZC) (Lokelma)

SZC (Lokelma) is a nonpolymer compound that exchanges potassium for sodium and hydrogen ions.

SZC is recommended as an option in the management of persistent hyperkalaemia with serum K>/= 6.0 mmol/L in outpatients with CKD 3b-5 (not on dialysis) or heart failure receiving a sub-optimal dose or not receiving RAASi due to hyperkalaemia (UK RA CPG)

SZC should be discontinued if RAASi is stopped (UK RA CPG)

SZC should be initiated in secondary care only (UK RA CPG)

It has a rapid onset of action (within 1 hour).

Patients should be instructed not to discontinue therapy without consulting their healthcare professional, and should be advised to seek help promptly if they experience difficulties in obtaining these medicines in the community (e.g. pharmacy shortage / supply problems)

Dose and preparation

10g once daily - titrated to achieve desired potassium concentration. Can initiate at 10g three times daily for 72hrs, followed by maintenance 5g daily, adjusted according to potassium

Maintenance dose usually 5g alternate days to 10g daily.

Combine powder with ≥45 mL (≥3 tablespoons) of water, stir well, and drink immediately

Can be taken with or without food

Oral medications that exhibit pH-dependent solubility should be administered ≥2 h before or 2 h after

Monitoring

Timing and frequency of monitoring patients on these medicines should be clearly considered and planned in secondary care, with the responsibility to ensure safe monitoring (and dose titration) resting with the initiating clinician in secondary care. Monitoring should be determined on a case by case basis.

Adverse effects

It is associated with dose-related oedema. This can be managed with dose reductions or diuretic therapy.

Cautions

SZC may be opaque to x-rays

Interacts with antifungals and anti-virals – see BNF

Avoid in pregnancy / breastfeeding

Significant sodium content which may or may not be absorbed and may have clinical implications with fluid balance

References/Evidence

References

Palmer BF, Potassium Binders for Hyperkalemia in Chronic Kidney Disease—Diet, Renin-Angiotensin-Aldosterone System Inhibitor Therapy, and Hemodialysis; Mayo Clinic Proceedings, 2020-02-01, Volume 95, Issue 2, Pages 339-354

BNF

SMC 2381 and SMC 2288

Linde C, Bakhai A, Furuland H, et al. Real-World Associations of Renin-Angiotensin-Aldosterone System Inhibitor Dose, Hyperkalemia, and Adverse Clinical Outcomes in a Cohort of Patients With New-Onset Chronic Kidney Disease or Heart Failure in the United Kingdom. *J Am Heart Assoc*. 2019; 8(23): e014500.

NICE. Patiromer for treating hyperkalaemia [ID877]. Available from: https://www.nice.org.uk/guidance/indevelopment/gid-ta10273/documents.

NICE Sodium zirconium cyclosilicate for treating hyperkalaemia https://www.nice.org.uk/guidance/ta599

UK Renal Association – Clinical Practice Guidelines – Treatment of Acute Hyperkalaemia in Adults (June 2020)

Appendices

1. Governance information for Guidance document

Lead Author(s):	Jack Fairweather

Lead Author	**Jack Fairweather**	**Date approved**	**October 2023**
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Distribution	

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