This material was developed by a multi-disciplinary panel of experts, comprising cardiologists, nephrologists, general practitioners, and specialist nurses, in collaboration with and funded by AstraZeneca. All experts and AstraZeneca contributed to the conceptualisation, draft and review of the material. AstraZeneca provided medical review and approval of the material.

# Transfer of care letter for an individual with cardiorenal disease on RAASi* therapy with hyperkalaemia

(out-patient secondary care to primary care)

## Two key aims:

1 **The optimisation of RAASi therapies for cardiorenal protection**

2 **The prevention and management of hyperkalaemia**

**Dear GP,**

**Please find below a transfer of care letter from [specialist name and speciality].**

**Patient details** Name: Date of birth: Address:

**GP details** Name: Clinic address:

**Specialist details** Name: Contact details:

### Past-medical history

| Condition | Date of diagnosis |
|---|---|
| Note cardiorenal diagnoses and all salient health issues | |

### Medication list

| Medication | Indication | Dose | Intended duration |
|---|---|---|---|
| Note RAASi therapies, potassium lowering therapies, medications that affect renal function or serum potassium, e.g. diuretics, plus all salient medications | | | |

### Relevant recent examination

| Status | Date |
|---|---|
| Note salient, e.g. blood pressure, weight, fluid balance | |

### Relevant recent blood monitoring

| Result | Date |
|---|---|
| Note salient, e.g. serum potassium, renal function | |

### Clinical update (example)

This individual was referred for management of (cardiorenal condition), optimisation of RAASi therapies and normalisation of serum potassium levels.

Potassium lowering strategies and therapies have been employed (provide details – see **'Potassium lowering strategies and therapies').** These should be maintained to prevent recurrence of hyperkalaemia and enable optimisation of RAASi therapy.

RAASi therapy has been optimised. This should be maintained for optimal cardiorenal protection (see **'RAASi therapy in the context of hyperkalaemia'**).

Clinical status, serum potassium and medication doses are now stable. Moving forwards, the care of this individual can be appropriately overseen by primary care (may be appropriate if individual on RAASi therapy only), OR jointly managed between primary and secondary care (may be appropriate if individual on potassium lowering therapy in addition to RAASi, or more advanced stages of cardiorenal disease).

*Renin Angiotensin Aldosterone System inhibitor therapy (ACE inhibitors, angiotensin II receptor blockers, angiotensin receptor/neprilysin inhibitor, mineralocorticoid receptor antagonists)

## **Roles/responsibilities of primary care** (advise next due dates)

| | |
|---|---|
| Clinical review | ✓ Usual primary care for underlying condition appropriate to severity (e.g. 1–4 times per year for chronic kidney disease (CKD)[1])<br>✓ Extra review (if primary care appropriate) at times of intercurrent illness, medication changes or change in underlying condition |
| Medication review | ✓ Review RAASi optimisation and potassium lowering therapies in context of clinical status and blood results |
| Blood monitoring | ✓ Include serum potassium, renal function and any other bloods indicated by medical conditions |
| Prescribing responsibility | Consider expertise and local area prescribing committee advice:<br>✓ Primary care to prescribe medications classified as green, e.g. most RAASi therapies<br>✓ Medications classified as amber, e.g. some potassium lowering therapies, can be prescribed by primary care in conjunction with specialist if sufficient information and support is provided, e.g. shared care agreement<br>✓ GPs with extended roles in cardiorenal medicine may prescribe more specialist medications |

## **Roles/responsibilities of secondary care** (advise next due dates)

| | |
|---|---|
| Clinical review | ✓ Usual secondary care for underlying condition appropriate to severity<br>✓ Extra review (if secondary care appropriate) at times of intercurrent illness, medication changes or change in underlying condition |
| Medication review | ✓ Review RAASi optimisation and potassium lowering therapies in context of clinical status and blood results |
| Blood monitoring | ✓ Routine bloods to be undertaken in primary care<br>✓ If extra or more specialist tests are deemed appropriate by secondary care, they must be performed, interpreted and actioned by secondary care |
| Prescribing | Consider local area prescribing committee advice:<br>✓ Secondary care to prescribe medications classified as red, e.g. some potassium lowering therapies<br>✓ Medications classified as amber, e.g. some potassium lowering therapies, can be prescribed by primary care in conjunction with specialist if sufficient information and support is provided, e.g. via shared care agreement |

The next specialist clinic appointment is booked for _____ OR no further specialist appointments have been booked.

**Please contact the department if required for non-urgent concerns with view to advice or re-referral.**
**Please contact the on-call team or send to urgent care or accident and emergency directly for urgent concerns.**

**Yours sincerely**
**Specialist**

## Potassium lowering strategies and therapies:

### 1. Address correctable causes of hyperkalaemia:

- ✓ **Adjust potassium elevating drugs****[2] – Prioritise those that can be swapped/withheld with least adverse consequences. **Down-titrate/discontinue RAASi therapy as a last resort**[3] – see **'RAASi therapy in the context of hyperkalaemia'**
- ✓ **Modify diet** – Advise a healthy, diverse diet with higher consumption of plant-based foods than animal-based foods and low consumption of ultra processed foods.[3] If potassium remains >5.5 mmol/L once non-dietary factors are addressed, refer to specialist dietician[2]
- ✓ **Correct metabolic acidosis**[2] – Metabolic acidosis increases the risk of hyperkalaemia
- ✓ **Optimise glycaemic control**[2] – Poorly controlled diabetes increases the risk of hyperkalaemia
- ✓ **Avoid/address constipation**[2] – Constipation increases the risk of hyperkalaemia

### 2. Consider potassium lowering medications (acutely or longer term):

- ✓ **Diuretics** – Can increase potassium excretion
- ✓ **Bicarbonate** – Consider adding oral sodium bicarbonate if serum bicarbonate <22 mmol/L
- ✓ **Potassium binders** – Remove potassium from the body via the gastrointestinal tract[2]

### 3. Prevent recurrence of hyperkalaemia:

- ✓ Recurrence of hyperkalaemia should be anticipated, and steps taken to avoid it[2]
- ✓ Careful prescribing of potassium elevating drugs – use only where clearly indicated, with particular care if combinations are required, e.g. ACEi/ARB/ARNi + MRA for heart failure (HF)[2]
- ✓ Regular review of correctable causes and consideration of the need for potassium lowering medications (as above)[2]
- ✓ Regular monitoring of bloods (potassium and renal function) and review should occur at the frequency appropriate for the disease state and the individual, e.g. 1–4 times per year for CKD[3] and HF[4], with additional monitoring during intercurrent illness (especially dehydrating illness), titration of medications that affect potassium levels or renal function, or change in the underlying cardiorenal condition
- ✓ Education of individuals with cardiorenal disease

✕ **Sick day guidance** – A temporary pause of RAASi therapy, diuretics, metformin and sodium-glucose co-transporter-2 inhibitors during acute dehydrating illness may decrease the risk of acute kidney injury and hyperkalaemia. However, the evidence base for this is weak and there is potential for harm if these medications are not re-instated. **Sick day guidance should be based on an individual risk assessment and there must be a clear plan to re-instate any paused medications.**[2,3]

****Potassium elevating drugs**[2]

- RAASi (ACE inhibitors, angiotensin II receptor blockers, mineralocorticoid receptor antagonists)
- Potassium supplements
- Potassium-sparing diuretics
- Trimethoprim/co-trimoxazole
- Nonsteroidal anti-inflammatory drugs
- Non-selective beta-blockers
- Antifungals
- Digoxin
- Salt substitutes
- Herbal medicines (e.g. alfalfa, dandelion)

## RAASi therapy in the context of hyperkalaemia:

- Hyperkalaemia associated with RAASi use can often be managed by measures to reduce potassium other than down-titration or discontinuation of RAASi therapy[3]
- Down-titration or discontinuation of RAASi therapies is associated with adverse clinical outcomes in CKD and HF[5–8]
- Only down-titrate or discontinue RAASi as a last resort; if hyperkalaemia is uncontrolled despite **'Potassium lowering strategies and therapies'**, or symptomatic hypotension or serum potassium >6.5 mmol/L (until normokalaemia achieved)[3]
- Re-initiate and re-optimise RAASi therapies that are down-titrated or discontinued once normokalaemia is achieved wherever possible – utilise appropriate **'Potassium lowering therapies and strategies'**
- If hyperkalaemia is preventing RAASi optimisation, seek specialist advice
- N.B. If RAASi therapies are discontinued, also discontinue potassium lowering therapies as appropriate

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