

## Patterns of Hyperkalemia Recurrence Among Chronic Kidney Disease Patients in UK Clinical Practice

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**Introduction:** Patients with chronic kidney disease (CKD) are at increased risk of hyperkalemia, HK (high serum potassium concentration) due to impaired renal function. This medical condition is potentially life threatening if untreated or poorly managed. This study describes the characteristics of CKD patients in the UK who experience HK and assessed the frequency of recurrent HK and time between first (index) and subsequent events.

**Methods:** A retrospective cohort study was conducted using linked Clinical Practice Research Datalink (CPRD) and Hospital Episode Statistics (HES) data from 01 January 2008 to 30 June 2018, with a five-year lookback period (2003-2007).

Patients were included if they were diagnosed with CKD stage 3+ (READ code or eGFR <60 mL/min/1.73m<sup>2</sup> without prior dialysis) during the study or lookback periods and aged >18 years at diagnosis (index).

Patient demographics, clinical history and baseline medication use were described. HK was defined as serum K<sup>+</sup> ≥5.0 mmol/L. HK events occurring during the study period, but after diagnosis of CKD, were assessed. Recurrent HK was defined as any event subsequent to the first event. Time to recurrence was calculated using Kaplan-Meier.

**Results:** In total, 297,702 CKD patients (mean age 74.7 years [standard deviation: 11.3], male [41.4%]) met eligibility criteria. At time of CKD diagnosis, 30.6% of the population had resistant hypertension. Other prominent comorbidities included diabetes (22.24%), CKD (7.9%) and cancer (7.8%). Approximately half of patients were in receipt of diuretics at baseline (49.2%), while 32.5% and 32.0% were in receipt of beta blockers and calcium channel blockers, respectively. During follow up, 67.0% of patients received a renin-angiotensin aldosterone system inhibitor (RAASi).

147,215 patients (49.5%) experienced at least one HK event, of which 53,695 (36.5%) had only one HK event, 93,250 (63.5%) had two or more HK events and 29,413 (20.0%) had six or more events. HK event incidence was predictive of subsequent events, with the probability of experiencing a HK event increasing from 49.5% to 63.5%, 70.7%, 74.1%, 76.5% and 78.6% for patients experiencing 2-6 events, respectively. There was an inverse relationship between the number of recurrent events and time to next event, with less time between the next event for those experiencing multiple events (Figure 1).

**Conclusion:** This study shows that approximately half of CKD patients experienced a HK event. Furthermore, patients who experienced a HK event were at increased risk of subsequent events. Frequent monitoring of serum potassium may help reduce the burden of HK in patients with CKD.