A DESCRIPTION OF THE INCIDENCE AND BURDEN OF HYPERKALAEMIA IN IRISH HOSPITALS 2022-2024

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Introduction

- Hyperkalaemia (HK) is a serious and potentially life-threatening condition defined by elevated serum potassium ($S\text{-}K^+$) levels, associated with increased mortality and morbidity.[1]
- HK commonly affects patients with reduced potassium excretion, such as those with impaired kidney function (AKI, CKD, ESKD on haemodialysis), as well as individuals with chronic conditions like heart failure, diabetes, and hypertension.[1],[2]
- It has been reported that patients with hyperkalaemia have higher healthcare resource utilization (HCRU), including more frequent inpatient and outpatient visits, emergency department attendances, and skilled nursing facility admissions, compared to those without the condition.[3-7]

Objective

- To describe the incidence and hospital burden of hyperkalaemia in Irish public hospitals between 2022 and 2024.

Method

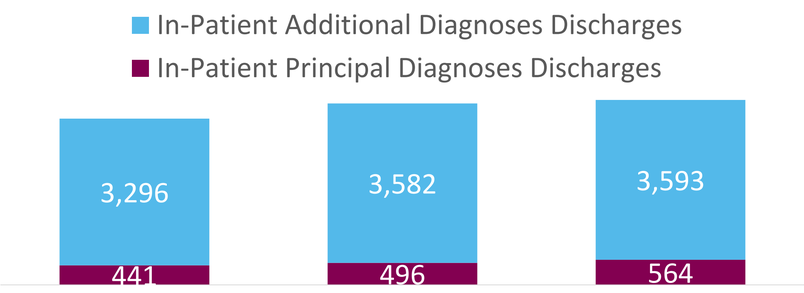
- National discharge data was analysed from Ireland's Hospital In-Patient Enquiry (HIPE) system for acute public hospitals, 2022–2024.[8]
- Diagnoses were coded at discharge using ICD-10; hyperkalaemia was identified by E87.5 as principal or additional diagnosis.
- Discharge counts and average length of stay (ALOS) were quantified.
- Among discharges with hyperkalaemia as an additional diagnosis, the top ten most common principal diagnoses were identified for a given calendar year.
- For each of these principal diagnoses, counts and ALOS were compared between discharges with and without hyperkalaemia as an additional diagnosis, additionally associated excess bed days were calculated.
- Excess bed days were costed using the inflation-adjusted average inpatient bed cost for July 2023 (€1,271.83).[9]

Results

Number of Hyperkalaemia In-Patient Discharges

- On average 500 diagnoses per year were recorded as hyperkalaemia in the principal diagnoses position and a further 3,490 diagnoses in additional diagnoses position.

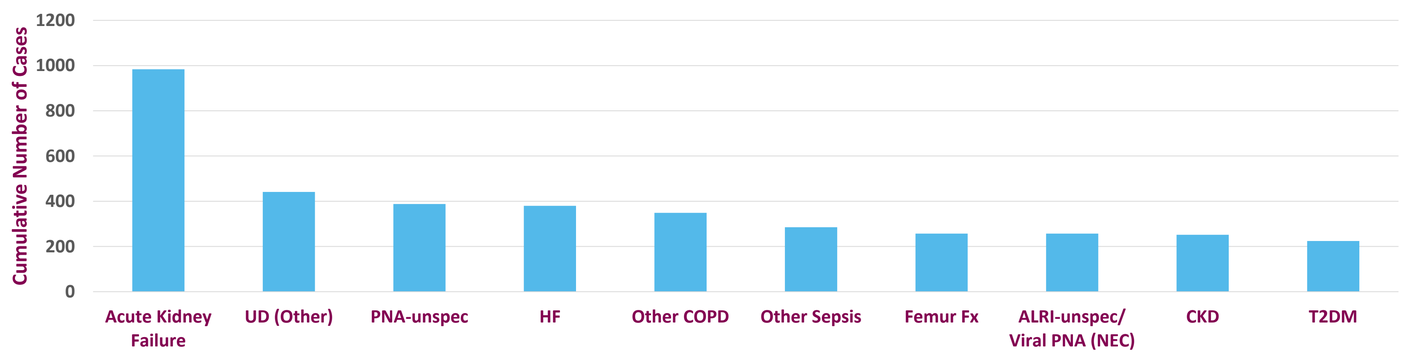
Figure 1. Hyperkalaemia ICD-10 E87.5 Diagnosis 2022-2024



Principal Diagnoses Associated with Hyperkalaemia

- The most common primary diagnoses when hyperkalaemia was coded were consistent year on year, typically conditions associated with hyperkalaemia or known to cause cellular damage including kidney disease, heart failure, chronic obstructive pulmonary disease, pneumonia, fracture and sepsis.

Figure 2. Top Ten Principal Diagnosis with Hyperkalaemia E87.5 (2022-2024)*

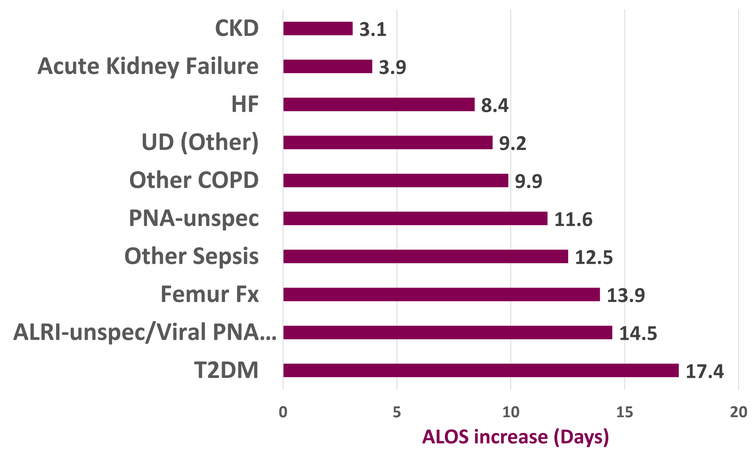


Abbreviations:UD (Other), Other disorders of urinary system; PNA-unspec, Pneumonia, organism unspecified; HF, Heart failure; Other COPD, Other chronic obstructive pulmonary disease; Femur Fx, Fracture of femur; CKD, Chronic kidney disease; T2DM, Type 2 diabetes mellitus; ALRI-unspec, Acute lower respiratory infection, unspecified; Viral PNA (NEC), Viral pneumonia, not elsewhere classified.
Footnote: Viral pneumonia appeared among the top ten principal diagnoses coded with E87.5 in 2022 only; acute lower respiratory infection appeared in 2023–2024; the remaining nine diagnoses appeared in the top ten with E87.5 across all three years analysed.

Increase in Average Length of Stay

- Conditions coded with additional hyperkalaemia had significantly longer hospital stays, with a weighted average increase of 3.1 days for chronic kidney disease and up to 17.4 days for type 2 diabetes compared with the same conditions without hyperkalaemia.

Figure 3. ALOS Increase with Hyperkalaemia 2022-2024



Abbreviations: ALOS, Average Length of Stay; UD (Other), Other disorders of urinary system; PNA-unspec, Pneumonia, organism unspecified; HF, Heart failure; Other COPD, Other chronic obstructive pulmonary disease; Femur Fx, Fracture of femur; CKD, Chronic kidney disease; T2DM, Type 2 diabetes mellitus; ALRI-unspec, Acute lower respiratory infection, unspecified; Viral PNA (NEC), Viral pneumonia, not elsewhere classified.

Cost of Excess Bed Days

- In total the additional excess bed days across all top 10 primary diagnoses with an additional diagnosis of hyperkalaemia coded vs the same condition without, were 11,527 days on average per year.
- Based on 2022 Healthcare Pricing Office data, the average cost of an inpatient bed adjusted for inflation to July 2023 (mid-point), was estimated at €1,271.83, resulting in a total cost of excess bed days per annum of €14.7million.

Conclusion

- Hyperkalaemia is frequently recorded as a diagnosis code in Irish hospitals.
- When patients have hyperkalaemia recorded as an additional diagnosis, they stay in hospital for longer than when they don't, indicating hyperkalaemia patients are more complex and costly to manage in a hospital setting.
- Further research is warranted to assess hyperkalaemia as an independent predictor of hospital length of stay.

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