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P147 -Use of a comprehensive electronic health record database to identify and describe clinical associations with hyperkalaemia, the treatments instituted and associated clinical outcomes

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Introduction:
Hyperkalaemia is a common and serious medical emergency. Existing treatments have important limitations and new treatment strategies are needed. However, designing hyperkalaemia treatment trials in the emergency setting is challenging given a paucity of high quality real-world clinical data on current standard of care, complications and meaningful outcomes. The increasing use of electronic health records (EHR) allows access to highly granular patient data which allows interrogation of some of the key areas of uncertainty. Here, we describe a dataset derived from a comprehensive EHR to assess the pathway and management of patients presenting with acute hyperkalaemia.

Methods:
We sought to identify patients presenting with acute hyperkalaemia to Addenbrooke's hospital, Cambridge, and to identify and describe clinical associations with hyperkalaemia, treatments instituted, subsequent course, clinical complications, duration of hospital stay, clinical outcomes and discharge destination. Data were abstracted from a single comprehensive EHR (Epic©) in use since November 2014. Records were identified for all patients attending the emergency department between April 2015 and August 2018. Data on age, sex, race, comorbidities, admission and discharge dates, concomitant medications, acute interventions and laboratory measures including blood creatinine, glucose, potassium and bicarbonate, vital signs and complications were extracted for all emergency admissions during the observation period. Diagnoses were identified from ICD-10 codes.

Results:
A total of 211,993 patients attended the Emergency Department 382,394 times during the study period. Of these, previous medical history was recorded for 128,015 patients (60.4%) and medication history for 159,925 (75.4%).Data included 1,521,625 serum potassium results (both formal laboratory and point of care testing) in 139,020 patients (65.6%). The mean serum potassium value was 4.2mmol/L (SD 0.7) and 13,535 patients (6.4%) had at least one episode of hyperkalaemia (>5.5mmol/L). The median GFR was 84mls/min (IQR 62-93) amongst the 76,636 patients (36.2%) in whom it was tested. ACE-Inhibitors were prescribed to 12,405 patients (17.1%), Angiotensin-2-receptor blockers to 5,149 patients (2.4%) and potassium sparing diuretics to 3,007 patients (1.4%). Non-steroidal anti-inflammatories were prescribed to 57,304 patients (27%). Intravenous insulin for hyperkalaemia was administered to 1,284 adult patients (0.6%) and calcium resonium to 255 patients (0.1%).

Conclusion:
We identified a cohort of emergency admissions with a large subgroup experiencing hyperkalaemic episodes. We proceed to describe the data arising in other abstracts submitted here. Our study demonstrates the value of EHRs in identifying hyperkalaemic emergency admissions at a large tertiary healthcare centre. A detailed description of the hyperkalaemic cohort is presented elsewhere.