Hospital Admissions in Persons with Chronic Kidney Disease Stage 3

Introduction: Chronic Kidney Disease (CKD), especially advanced CKD, is associated with high comorbidity and hospital admission rates. However, the majority of people with CKD have mild disease and less is known about associated admissions in this group. In this prospective study of CKD stage 3 patients recruited from primary care, we investigated hospital admissions over a period of 5 to 7 years.

Methods: 1741 people with estimated GFR 30-59mL/min/1.73m2 were recruited into the Renal Risk In Derby (RRID) Study. Participants were comprehensively assessed at baseline, year 1 and year 5. Data on all hospital admissions between 2008 and 2015 were obtained from the Hospital Episode Statistics data warehouse, containing details of all admissions to NHS hospitals in England. ICD-10 coding was used to indicate reasons for admission.

Results: The study population of 1741 participants had a median age of 74 years (IQR 67-79), mean eGFR of 53.5±11.8 mL/min/1.732 and 60% were female. 1425 participants had a total of 6904 hospital admissions between recruitment and 31 December 2015; 316 participants had no hospital admission. The median number of admissions was 4 (IQR 2-7) and median length of stay (LOS) 0.0 days (IQR 0-4). 3099 (45%) admissions with LOS of less than 1 day were mainly day-cases. For those with a LOS of ≥1 day, the median LOS was 4 days (IQR 2-9). The annualized admission rate is shown in Table 1 with data from other groups for comparison.

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| Table 1 Annualised Admission rates per 100 patient years |
| UK General Population aged 60-75yrs (2012) | 42 |
| RRID Study CKD stage 3 (2008-2015) | 66 |
| Haemodialysis Patients aged 65-75yrs (USRDS 2005-2014) | 176 |

Incidence of coded AKI during admission was 3 per 100 patient-years and cardiovascular events 11 per 100 patient-years. Main reasons for all admissions are shown in Table 2 and were comparable to admissions in the age equivalent general population.



Conclusion: Patients with early CKD have higher rates of hospital admission than the general population, though reasons for admission were similar to the general population. Amongst older people, those with CKD represent a high-risk group who could be targeted for intervention to reduce hospital admissions. Our findings also emphasize the importance of comorbid conditions in determining outcomes for those with CKD.