Acute kidney injury in Indigenous Australians: an unrecognised priority for action

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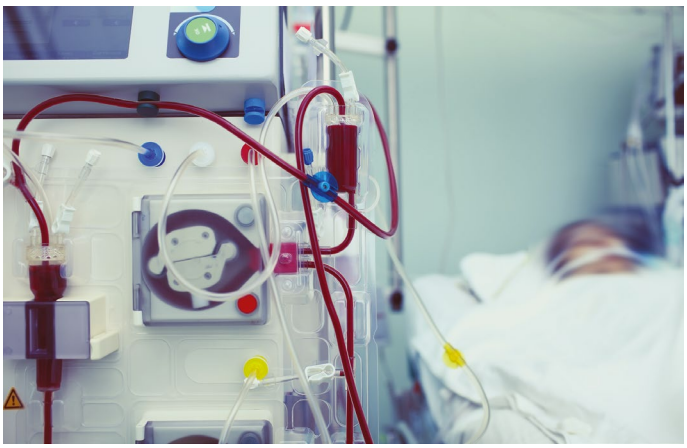
Social determinants of infectious disease and awareness of the risks of acute kidney disease must be improved

From 2010 to 2030, the number of people receiving renal replacement therapy for end-stage kidney disease is projected to double worldwide to more than 5.4 million people.[1] In 2013–14, there were 186 268 hospitalisations for dialysis of Indigenous Australians, a rate ten times higher than that for other Australians[2] because of much heavier reliance on hospital-based dialysis treatment,[2] social disadvantage,[3] a higher prevalence of chronic kidney disease,[2] more rapid loss of kidney function in people with chronic kidney disease,[4] and a greater risk of progression to end-stage kidney disease among Indigenous people with diabetes.[5] As acute kidney injury (AKI) is a risk factor for chronic kidney disease,[6] we need to better understand the factors underlying AKI and its population disease burden.

In this issue of the *MJA*, Mohan and colleagues report the population burden and diagnoses associated with AKI in Indigenous people in the Kimberley.[7] They identified cases of AKI (defined by Kidney Disease: Improving Global Outcomes [KDIGO] criteria:[8] absolute increase in serum creatinine level in 48 hours of at least 26.5 μmol/L or an increase over 7 days of at least 50%) during 2009–2016 in primary care and hospital electronic record systems. They analysed data for Aboriginal or Torres Strait Islander Australians aged 15 years or older who did not have end-stage kidney disease, for whom at least two serum creatinine values within 7 days had been recorded.

The authors identified 324 AKI events in 260 individuals, an overall incidence of 479 per 100 000 population. Incidence increased with age; 95% of AKI events were associated with hospital admissions, one in five of which required transfer to a tertiary centre, usually more than 1000 km away. For three of five admissions, an infection was the principal (52%) or additional diagnosis (7%), with pneumonia, skin and urinary tract infections the leading causes. The authors found the age-specific incidence among Kimberley Indigenous people was greater in the age range 15–64 years than that for all Australians, but was lower for Indigenous people aged 65 or more.[9]

These findings have a series of implications for research and clinical practice. First, the report confirms the feasibility and utility



of data linkage of administrative data from primary care and hospital systems for exploring the burden of AKI and patterns of care. A prospective study including 600 Indigenous Australian adults across regional and remote areas has recently confirmed the rapid loss of kidney function in Indigenous Australians with chronic kidney disease,[4] but models incorporating risk factors such as diabetes, glycaemic and blood pressure control, level of albuminuria, and markers of disadvantage have not explained this rapid progression of disease. The contributions of recurrent AKI associated with infection, sepsis and the use of nephrotoxic agents, and of health care accessibility, acceptability and utility to Indigenous people[10] should be research priorities.

Second, the authors appropriately concede that they have perhaps underestimated the AKI burden, as episodes of community-acquired AKI not associated with repeated blood tests or hospital admission would not have been captured. In the absence in the Kimberley of health services providing acute dialysis and an intensive care unit, more severe cases of AKI requiring dialysis[11] are also likely to have been excluded.

Third, the authors compared their estimates of the population burden with estimates by the Australian Institute of Health and Welfare, which defined cases according to International Classification of Diseases (ICD-10-AM) coding of hospital admission diagnoses in the National Hospital Morbidity Database. Among the Kimberley AKI events for which discharge summaries were available, AKI was coded as a principal or additional diagnosis in one of four cases. To derive more reliable estimates of the total incidence of kidney failure, including among people not receiving dialysis or a transplant, linkage of data from the national dialysis and transplant registry with national death registration data, each of which provide complementary but incomplete pictures of the burden of disease,[12] would be required. For robust estimates of the total population burden of AKI, events defined by repeat serum creatinine measurements or by principal and additional diagnoses for hospital admissions must both be included.

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Fourth, awareness of physicians about the burden of AKI in remote Indigenous communities must be improved and information shared across hospital and community sectors to facilitate evidence-based approaches to maintaining kidney function, particularly in patients presenting with dehydration and reduced oral intake, hypotension, sepsis, or recent surgery. Evidence-based clinical practice guidelines for preventing AKI when a person becomes acutely ill are also needed.[13]

Fifth, in partnership with patients and communities, we must develop culturally appropriate and accessible information about AKI and kidney health.[10] This should include information about the importance of prompt medical attention when symptoms associated with respiratory, skin, and urinary tract infections are apparent.

Indigenous Australians with kidney disease tell us how important it is to prevent kidney disease and to reduce the number of people who need dialysis.[10] To do so, we must address the social determinants of infectious disease, particularly the need for adequate housing, and increase awareness of the risks, management, and follow-up in primary care for patients with AKI.

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