

## Acute Kidney Injury in Indigenous Australians in the Kimberley: age distribution and associated diagnoses

Within Australia, Chronic Kidney Disease is a significant health problem that disproportionately affects the rural Aboriginal and Torres Strait Islander (Indigenous) population. Compared to non-Indigenous Australians the incidence of end-stage kidney disease (where dialysis or renal transplant is required) is 4.9 times higher among Indigenous men and 8.0 times higher among Indigenous women.

A lot of research has gone into identifying factors that contribute to the development and progression of CKD, in both Indigenous and non-Indigenous Australians. Acute Kidney Injury is a sudden drop in kidney function that can happen with any kind of significant illness. Studies from other countries have shown that Acute Kidney Injury is directly linked to the progression of CKD: however, this hasn't been described specifically for Aboriginal people, so we don't know how important it is in the Kimberley region.

In 2015, a national review from the Australian Institute of Health and Welfare reported that in Australia Acute Kidney Injury hospitalisation rates were increasing over time, particularly for patients aged 60 years or more who had other medical problems. Aboriginal and Torres Strait Islander people were found to have higher rates, but the cause of Acute Kidney Injury in this population was not described.

This study aimed to better describe the rates and causes of Acute Kidney Injury events in the Kimberley. We wanted to help identify opportunities to reduce the high incidence of Chronic Kidney Disease among Indigenous Australians.

### We aimed to find out:

- What is the overall rate of Acute Kidney Injury in the Kimberley?
- Are these Acute Kidney Injury events happening in hospital or in the community?
- What is the age distribution and causes of Acute Kidney Injury in the Kimberley?
- Is this different to what is described nationally?

### How was this study done?

This project received ethics approval from the Western Australian Aboriginal Health Ethics Committee and the WA Country Health Service Human Research Ethics Committee and was supported by the Kimberley Aboriginal Health Planning Forum Research Subcommittee.

We used laboratory measures of kidney function (creatinine) in Kimberley Aboriginal patients aged 15 years or over who were not already in ESKD, to identify any sudden drops. Acute Kidney Injury was defined using an internationally accepted definition<sup>1</sup> and for each confirmed case, the cause was recorded and whether it happened in community or in hospital. If the event happened in hospital, discharge summaries were also checked to see if the event was recorded and communicated back.

## What did we find?

Overall we found 324 cases of Acute Kidney Injury. In our Kimberley population, Acute Kidney Injury occurred at younger ages. In particular, 92 of 324 (28%) of were in people under 45 years of age, compared with 8% for all Australians.

We also found that skin infections (as well as respiratory and urinary infections) were among the most frequent main diagnoses for Indigenous people in the Kimberley who had an Acute Kidney Injury. This was very different from the national data where skin infections were not common.

Most patients were hospitalised, but a third of events were detected either on or before the day of admission; this suggests that serious illnesses begin in the community and environmental health factors may be important.

## What happens now?

Risk factors for Acute Kidney Injury are common in the Kimberley. It is important that health providers are aware so that Acute Kidney Injury can be detected early and properly managed.

Since we began working on this project, we have used the information to inform our Kimberley Chronic Kidney Disease (CKD) regional protocol<sup>2</sup> and regional education sessions.

Acute Kidney Injury is a risk factor for long term Chronic Kidney Disease. Good communication from hospitals back to primary care providers and renal services can ensure patients receive long term care aimed at reducing this long term risk. Reducing complications from Acute Kidney Injury requires a collaborative approach between primary care, hospitals and environmental health services to provide good health services, support healthy environments and keep kidneys healthy.

If you have any questions or comments please direct them to Dr Emma Griffiths by email ([emma.griffiths@rcswa.edu.au](mailto:emma.griffiths@rcswa.edu.au)) or phone (08) 9194 3299.

### References:

#### 1. Definition of Acute Kidney Injury:

An absolute increase in serum creatinine ( $\geq 26.5\mu\text{mol/L}$ ) within 48 hours or a relative increase of at least 50% of baseline within 7 days).

Kidney Disease: Improving Global Outcomes (KDIGO) Acute Kidney Injury Work Group. KDIGO clinical practice guideline for acute kidney injury. *Kidney Int Suppl* 2012; 2: 1-138.

#### 2. Regional Chronic Kidney Disease protocol:

Chronic Kidney Disease (CKD), available online: <http://kams.org.au/wp-content/uploads/2017/12/Chronic-Kidney-Disease-CKD-Reviewed-April-2017.pdf>