Reviewer’s report

Title: Estimating the total prevalence and incidence of End-Stage Kidney Disease among Aboriginal and non-Aboriginal populations in the Northern Territory of Australia, using multiple data sources

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Reviewer: James Heaf

The authors have studied the true incidence of ESKD compared to the number of treated cases (RRT) and find a considerable underestimation. The study confirms previous findings of a higher incidence in Aboriginal individuals. The use of multiple datasets in epidemiologic studies is emphasized.

The main problem with this paper is the definition of ESKD. The normal definition is progressive CKD requiring permanent RRT. This will occur at a eGFR of about 7 ml/min. Patients not receiving therapy can be expected to die within months. This study has included all patients with CKD stage 5. Many patients with an eGFR of 15 ml/min are virtually asymptomatic, and the recent IDEAL study suggests that RRT is not indicated for them. These patients should, of course, be under nephrological care, but this issue is not addressed in the current study. Thus, the undiagnosed group combines patients with CKD not requiring RRT with the much more interesting group of patients requiring, but not receiving, therapy, either due to patient wish, physician decision, poor referral patterns or patient non-compliance.

The AIHW definition of ESKD is similarly controversial. A patient has ESKD if one of various CKD diagnoses is given as associated cause of death. Since mortality, particularly cardiovascular, increases with falling eGFR, it would be perfectly rational to include this as an associated diagnosis e.g. for a patient with hypertensive nephropathy, CKD stage 4, who died of a cerebral hemorrhage. The reliability and comprehensiveness of associate diagnoses should be documented.

Since the databases are essentially measuring different things, a table is therefore required describing how many patients were captured by each of the capture techniques, both alone and in combination.

I do not quite follow the argument that underestimation is due to the fact that Aboriginals do not currently access the services for social, geographic or cultural reasons.

1) The prevalence underestimation was similar between Aboriginals and non-Aboriginals (Table 2). The statement "Estimated undiagnosed ESKD prevalent and incident cases who were Aboriginal people accounted for a much larger proportion (81% and 82%
respectively) than their population proportion (30%)" (page 6 line 10) could be mainly due to their much higher incidence of CKD.

2) In order to be included in the study, all patients had to have had at least one contact with the health services. The question, as to whether the subsequent follow-up treatment was inadequate was due to patient- or system-related causes, is not addressed by this study.

Fig 1 could be improved. The absolute number of patients is uninteresting. Consider four figures showing incidence and prevalence rates proportional to population for both Aboriginal and nonaboriginal patients

Page 4 line 8 (4-8) "with a previous eGFR <60 mL/min/1.73m2" Why? Many patients only have their first creatinine measured at a late stage in their kidney disease.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

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I am able to assess the statistics

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