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## Commentary

### Haemodialysis in Samoa: A model for other Pacific nations

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Chronic kidney disease (CKD) affects nearly 700 million individuals globally [1]. Approximately 2–3 million have end-stage kidney disease (ESKD) that is treated with haemodialysis, peritoneal dialysis, or a kidney transplant. The vast majority of these patients (~80%) are treated in a handful of countries – United States (US), Germany, Japan, Brazil, and Italy [2]. For developing and middle-income countries, the infrastructure and financial burden are too substantial to offer these therapies. Thus, over 1 million people die due to untreated kidney failure worldwide [3].

CKD is a major health problem in the Pacific Islands. The age-standardized prevalence rate of CKD in the region is nearly 50% higher than the global rate (12 329 versus 8 724 per 100 000). Moreover, the age-standardized death rate attributable to CKD is three-times higher than the global rate (45.2 versus 15.90 per 100 000) [1]. Dialysis availability is limited in the Pacific, which partly accounts for the excessive death rate. Dialysis facilities are available in US Territories (Guam, American Samoa, and the Northern Mariana Islands) and are funded by Medicare. Independent nations that are freely associated with the US (Republic of Palau, Federated States of Micronesia, and Republic of Marshall Islands) have had programs intermittently over the years, but these are not supported by Medicare [4]. Dialysis in these Pacific Islands is limited, often at capacity, and unreliable. Thus, many move to the US to re-

ceive kidney replacement therapy [5]. Other Pacific nations rely on countries such as New Zealand to provide dialysis treatment.

Most information regarding haemodialysis outcomes are from developed countries. Very little is known about the provision of haemodialysis and long-term outcomes in middle-income countries, particularly in the Pacific. In *The Lancet Regional Health – Western Pacific*, Tafuna'i and colleagues describe the establishment of a chronic haemodialysis program in the independent nation of Samoa (total population 202 000) and the incidence and prevalence of ESKD there [6]. Before the dialysis program was established, 5% of the Samoan health budget (USD 1.3 million) was used to dialyze 6 patients in New Zealand, prompting a change in how ESKD-care was provided to its citizens. Financial support from the Singapore National Kidney Foundation helped establish a haemodialysis program in Samoa operated by the National Kidney Foundation of Samoa (NKFS). NKFS is now largely funded by the Samoan government, though patients pay USD 3.70 per treatment.

In terms of incidence and prevalence of ESKD in Samoa, Tafuna'i et al. reported crude mean incidence and prevalences rate of 224 and 629 per million population since 2005. The most recent 5-year data show that the mean crude incidence and prevalence rates are on the order of 300 and 930 per million population, providing more present-day assessments of the burden of ESKD. These rates are almost certainly underestimates. Many Samoans have dual citizenship with Australia or New Zealand and may receive dialysis in those countries. Patients may die before being diagnosed with

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ESKD or they may choose not to do dialysis because they cannot afford the treatments.

The excessively high incidence and prevalence rates of ESKD in Samoa are similar to those observed among Pacific Islanders in the US and New Zealand [7,8]. Furthermore, the mean age of dialysis initiation among Pacific Islanders is in the mid-50 s, leading to premature death and a financial strain on patients and families. Diabetes mellitus is the most common cause of ESKD among Pacific Islanders globally, and effective strategies that prevent diabetes and diabetes-related complications in Pacific Islander communities are sorely needed. For CKD, blood pressure control and inhibition of the renin-angiotensin-aldosterone-system (RAAS) are key. Unfortunately, the mainstay of diabetes therapy in many Pacific countries is insulin and metformin, with limited knowledge about or access to newer therapies such as the sodium-glucose cotransporter-2 inhibitors (SGLT2i), which have a remarkable effect on kidney function preservation and cardiovascular risk reduction [9,10]. The addition of SGLT2i to blood pressure control and RAAS inhibition could significantly and positively impact the health of Pacific Islander communities. The cost of these novel agents are considerable, but governments and health care providers in the Pacific should consider these as worthy investments in the long run.

The NKFS program also provided acute haemodialysis to 73 individuals. In all, 466 Samoan citizens received haemodialysis since 2005. An increase in the prevalence rate of ESKD is a good sign that the mortality rate associated with haemodialysis is decreasing. This and a likely growing need will require expansion of the program and/or the establishment of home therapies. Ongoing monitoring of the ESKD program in Samoa and developing infrastructure to track CKD incidence and prevalence to project resource utilization is crucial. Other Pacific nations are encouraged to establish their own dialysis programs, monitor progress, and determine their cost effectiveness. Novel and effective glucose-lowering therapies should be seriously considered despite their costs, as they may reduce the incidence of ESKD in the Pacific.

## Declaration of Competing Interest

Nothing to disclose.

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