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EDITORIAL: IMPACT OF CHRONIC KIDNEY DISEASE ON HEALTHCARE IN BRUNEI DARUSSALAM.

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IMPACT OF CHRONIC KIDNEY DISEASE ON HEALTHCARE IN BRUNEI DARUSSALAM.

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Kidney disease is on the ascendancy, especially in developed countries where disease burden is more evident. Most high income countries have experienced a huge rise in kidney disease cases over the past few decades, mainly through the improved accessibility of dialysis, availability of opportune screening, increasing life expectancy and emergence of non-communicable diseases like diabetes mellitus and hypertension. Lifestyle problems like obesity, lack of exercise and unhealthy eating pattern have compounded the problem by accelerating the progression of existing kidney disease. Recognition of these patterns has led to concerted efforts between key stakeholders and some developed countries are beginning to witness a less progressive trajectory of kidney disease. The magnitude and impact of kidney disease is less well defined in developing countries mainly because of a lack of functional surveillance system and inadequate resources for detection and treatment.[1] There is emerging evidence that developing countries have an even greater undetected kidney disease burden.[2] The 2019 World Kidney Day theme 'Kidney Health for everyone everywhere' is an apt campaign slogan to address this glaring disparity and inequality in kidney care worldwide.[3]

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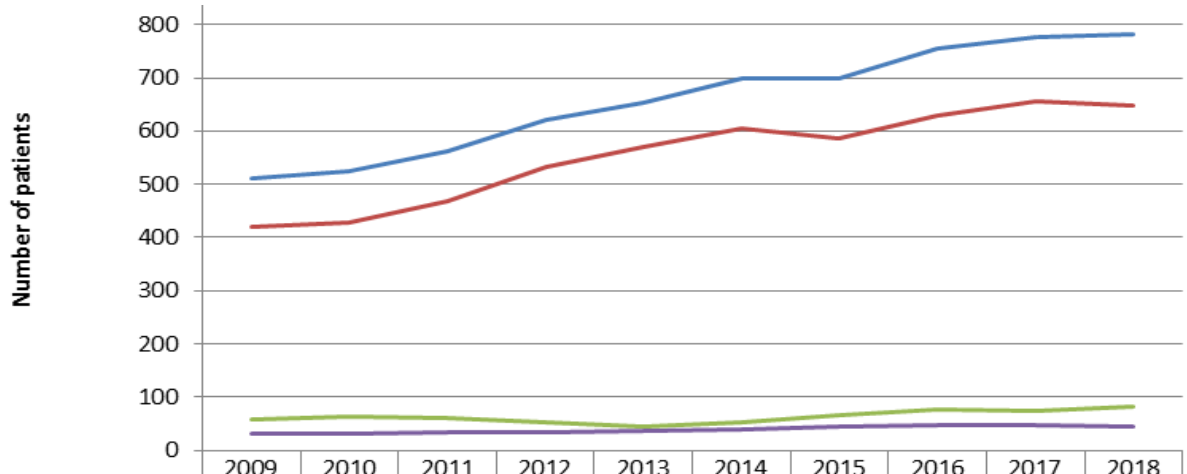
As a country with high socioeconomic status, it is not surprising that Brunei is not spared from the chronic kidney disease (CKD) epidemic. The country has one of the highest incidence and prevalence of End Stage Kidney Disease (ESKD) in the world.[4] Data from the latest Brunei Dialysis and Transplant Registry (BDTR) reported 783 patients on dialysis and transplant treatment at the end of 2018.[5] Based on calculations made through previous renditions of the BDTR, there has been an annual increment in the ESKD population by 5-10% in the past decade.[6] This increment is disproportionate compared to the annual population increase in the country. A simple ratio analysis indicates that 1 in every 751 person in Brunei has ESKD in 2009. Within ten years, this ratio has narrowed to 1:553 and if this rate of progression continues, we can predict patient per population ratios of 1:409 by 2028 and 1:339 in 2038. Clearly, this will have significant cost implications as the expenditure for dialysis will have to double or triple in this time frame and more importantly, it will result in a greater siphoning of healthcare resources by the renal services at the expense of other healthcare services.

Haemodialysis (HD) remained the main modality of renal replacement therapy (RRT) with over 80% of existing ESKD patients on this treatment. However, patients are increasingly being encouraged to take up peritoneal dialysis (PD) and transplantation through government endorsed policies and programs as both modalities offer better

quality of life to patients and reduce long term costs. Since then, there are encouraging trends that penetrance for PD and transplant is on the uptick. The country adopted a peritoneal dialysis preference policy in 2014 where preferential PD counselling is given to pre-dialysis patients entering the RRT program through regular PD-oriented workshops, symposiums and health promotion activities.[7] Nephrologists are trained to insert peritoneal dialysis catheters to shorten waiting time and dependence on surgeons. Over and above that, doctors and nurses' PD training needs are prioritized through training opportunities abroad. During a short space of 4 years, PD numbers have increased by 78% from 46 in 2013 to 82 in 2018.

The inception of the local renal transplant program in 2013 has given the local community a safe, ethical and non-commercialised option of kidney transplant. Prior to this, all renal transplantation cases were carried out abroad in neighbouring countries like Singapore and Malaysia. To date, seven successful live-related renal transplantations have been performed in Brunei in the past 4 years which represent a 28% increase of the overall transplant population. The momentum for more transplants is propitious and interest in donation has heightened in the last few years. A recent local study has shown that patients are positive and hopeful about the local program but more efforts are needed to improve awareness especially amongst donors.[8] Figure 1 shows the ten year trends of patients on all three different modalities of RRT in Brunei Darussalam.

Diabetes mellitus is the main cause of ESKD in Brunei, with up to 60% of kidney failure attributed to this disease. The significant link between diabetes and CKD appears to be unique to the region. Along with Singapore and Malaysia, Brunei has one of the highest diabetes-related ESKD in the world, possibly indicating a strong interplay between environmental and genetic causal factors with disease.[4] Like many countries, cardiac diseases and sepsis were the main causes of deaths amongst ESKD patients.[5] A recent national study reported a national Acute Kidney Injury (AKI) incidence of 67 cases per million popu-



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
All RRT	510	524	562	620	652	698	698	754	778	783
HD	420	429	468	533	570	606	586	629	656	649
PD	59	63	60	53	46	53	67	78	75	82
Transplant	31	32	34	34	36	39	45	47	47	46

Figure 1- Ten years trend of RRT in Brunei (2009-2018).

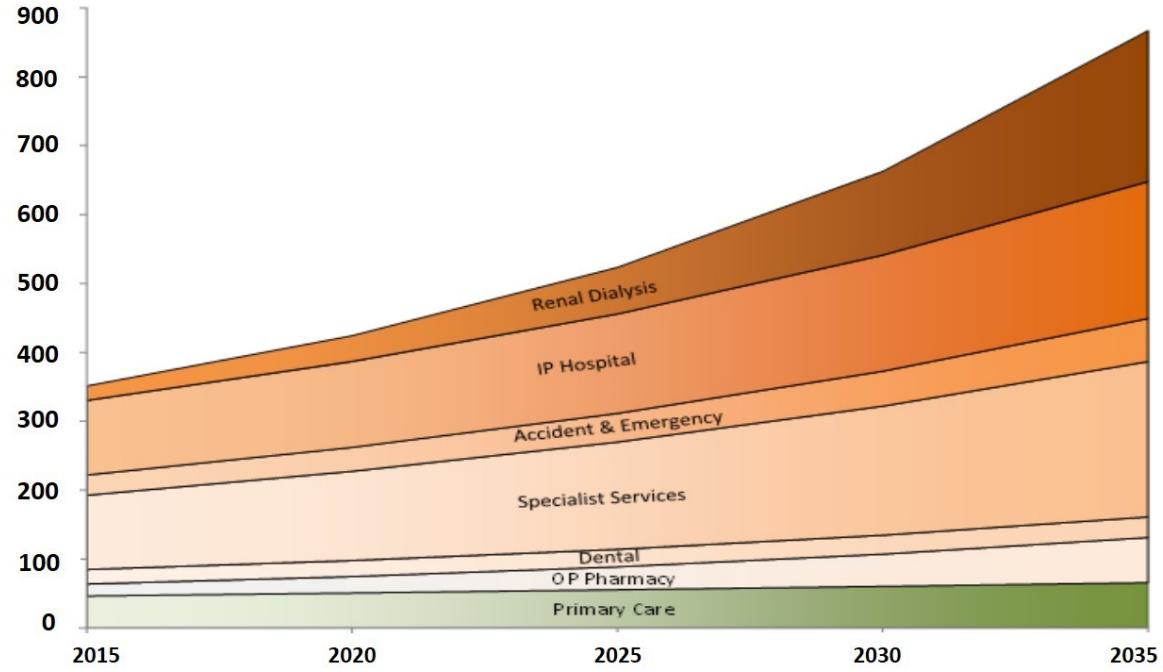


Figure 2: Cost projection of renal dialysis (2015-2035). (Image and permission to reprint obtained from the Ministry of Health, Brunei Darussalam)

lation with 26.3% of patients progressing into ESKD or died.[9] Suboptimal coding and reporting in hospitals may have led to underreporting of milder cases of AKI in this study.

Brunei has a unique healthcare system that provides total ESKD care for the population. Dialysis and transplant costs are entirely borne out by the government. Approximately 5-10% of the Ministry of Health budget was taken up by the provision of dialysis and associated renal care support. In line with the expected expansion of the future dialysis population, it is predicted that more than 20% of healthcare budget may be taken up for dialysis by 2035 (Figure 2). Future schemes have been proposed to lessen the disease burden imposed on the government. Privatisation of dialysis is being planned for the future and it is hoped that this may improve efficiency and productivity of the services. The establishment of a National Kidney Foundation could tap on external funding resources to reduce reliance on government spending and paves the way for the emergence of other charitable organisations. Personal contributions through private insurances and endowment policies may also alleviate future government spending.

Future expansion of the existing dialysis service is inevitable. Dialysis centres in the Brunei-Muara district are becoming oversubscribed and contingency plans for future centres are needed. Judging by the clustering and spread of the population, we anticipate future dialysis centres to be located in Berakas, Muara and Sengkurong. Augmentation of the existing local manpower (10 nephrologists per million population), to match the recommended ratio (> 15 nephrologists per million population) of high income countries has proven to be challenging because of the scarcity of renal doctors worldwide.[3,6,10] Due to the restriction of renal manpower and resources, new satellite centres could potentially be congregated with existing healthclinics through joint ownerships with primary care teams. This is consistent with the care provided to satellite dialysis patients in other countries where the day-to-day primary doctor role has been assumed by general practitioners.

Going by international trends, the future of CKD need not be as bleak as originally mooted out. Improving lifestyle management and healthcare literacy through public health advocacy can prevent the development of kidney disease. Screening and identification of early renal disease in patients with high risk factors can delay progression of disease, especially those in diabetes, cardiology, geriatrics and hypertension clinics. Options for end of life care should be readily available through palliative or geriatric clinics to prevent patients from unnecessarily entering RRT program. There is no doubt that nephrology will still have to play an overall overarching role in the care of CKD patients, but effective management of the CKD epidemic will require buy-ins from the aforementioned allied specialties to streamline care for prevention, early disease management, complications management and palliation. Effective co -management with relevant stakeholders allows judicious use of resources and limits the long term impact of kidney disease on healthcare in the country.

Declaration:
The authors declare that there is no financial or other conflict of interest related to this article and that all authors contributed equally

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