

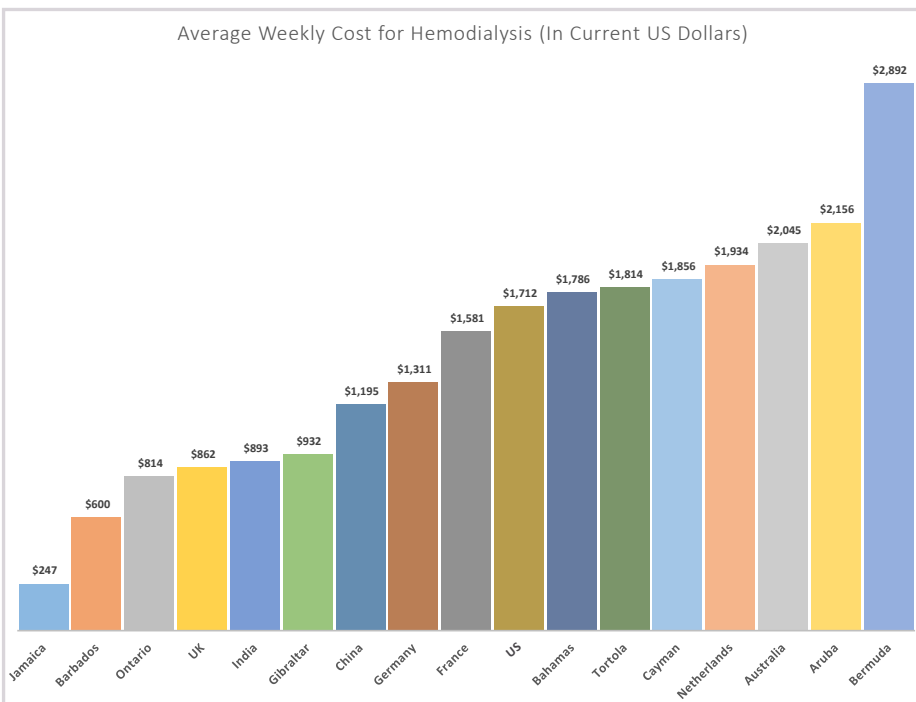
# ISSUE BRIEF: DIALYSIS



## CONTEXT

Chronic Kidney Disease (CKD) progression into End-Stage Renal Disease (ESRD) is characterised by a decrease in kidney function resulting in the need for replacement renal therapy which is currently haemodialysis, peritoneal dialysis or kidney transplant. This loss of kidney function can be accelerated by other non-communicable chronic diseases such as hypertension, diabetes and obesity<sup>1</sup>. The ideal treatment for kidney failure is kidney transplants. There is an insufficient supply of kidneys available to meet the demand for transplants<sup>2</sup> and an underutilisation of peritoneal dialysis and home haemodialysis, which leaves the majority of patients to receive in-centre haemodialysis.

Average Weekly Cost for Hemodialysis (In Current US Dollars)



## COST

By pooling funds, there is no direct cost to patients which ensures those who need the care, receive it. However, the population in need of dialysis is growing at a rate which, based on the current fees for dialysis, is unsustainable.

The portion of insurance premium to be paid into the MRF is based on claims experience and projected changes to claims trends. The MRF premium for fiscal year ending March 2018 (FYE18) was \$91.57. Of this, \$25.41 was set aside specifically to cover dialysis claims. This portion was determined, based on an estimated 175 individuals receiving dialysis for a total cost not exceeding \$22,840,000<sup>3</sup>.

An analysis of expenditure in FYE18 revealed that claims for dialysis have exceeded projections due to a greater increase in prevalence of ESRD cases for the year and an increase in the number of sessions provided to individuals on haemodialysis.

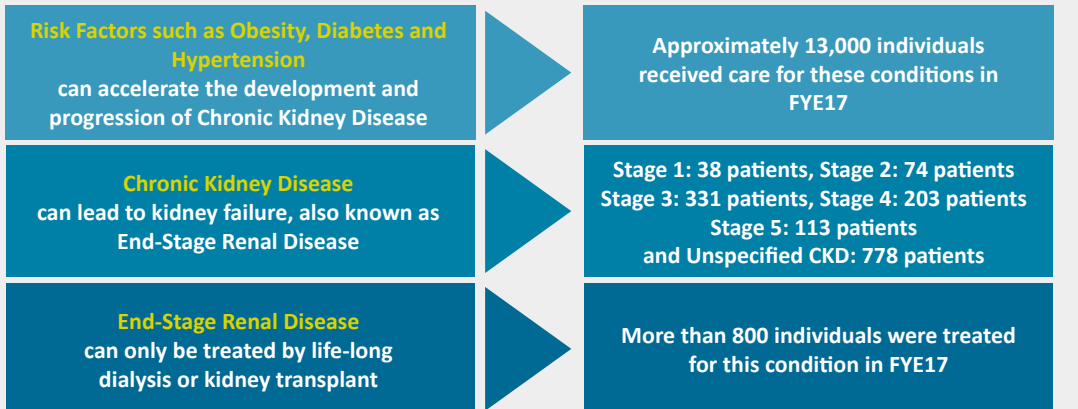
## HEALTH COVERAGE

In Bermuda, dialysis and kidney transplants are covered by the Mutual Re-insurance Fund (MRF) which was established by the Health Insurance Act 1970 (the Act) to cover dialysis, kidney transplants and transplant maintenance drugs. The MRF is funded by a portion of all health insurance premiums and covers costs for insured persons<sup>3</sup> only. Government currently subsidises the cost of dialysis for the uninsured.

As per the Act, the MRF pays for dialysis when provided by the hospital or any other facility that has been approved by the Health Council and at a rate that has been approved by the Health Council. In the US, dialysis is typically covered by Medicare at regulated rates<sup>4</sup> and only when provided by Medicare-certified hospitals.<sup>5</sup>

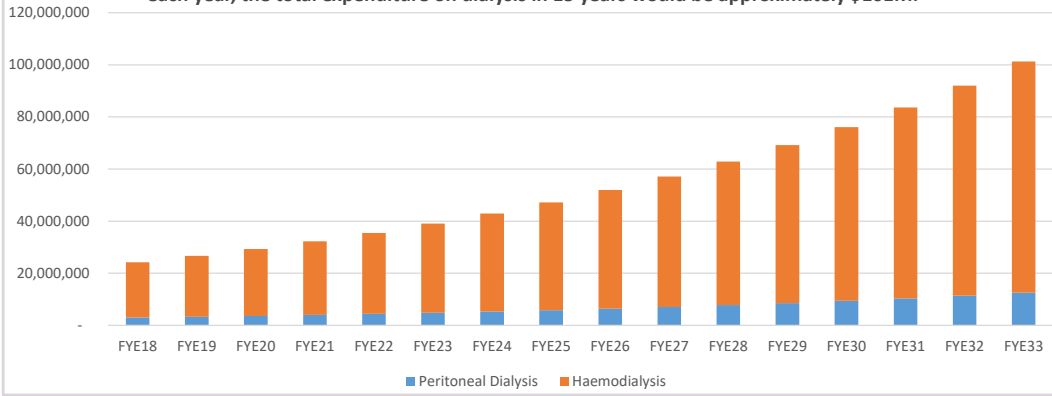
**Effective 1<sup>st</sup> June 2017, the approved rate for peritoneal dialysis in Bermuda is \$10,409 per month giving an annual cost of \$124,908 per patient and the approved rate for haemodialysis is \$964 per session (estimated 3 sessions per week) per patient, giving an annual cost of \$150,384 per patient.**

For comparison, the US which has the highest per capita health costs and whose health as a portion of GDP is the largest of all OECD countries, the per session bundled cost for dialysis is \$232.37 per patient.<sup>6</sup> This cost includes ESRD-related drugs, laboratory services, and medical equipment and supplies.<sup>7</sup>



<b>Stage 1 CKD</b> GFR ≥ 90 <i>Normal and high GFR + markers of kidney damage</i>	<b>Stage 2 CKD</b> GFR 60-89 <i>Mild reduction in GFR + markers of kidney damage</i>
<b>Stage 3 CKD</b> GFR 30-59 <i>Mild to moderate reduction in GFR</i>	<b>Stage 4 CKD</b> GFR 15-29 <i>Severe reduction in GFR</i>
<b>Stage 5 CKD</b> GFR <15 <i>Kidney failure</i>	<b>GFR = Glomerular Filtration Rate</b> Source: National Institute for Health and Care Excellence (NICE) (2015). <i>Chronic kidney disease in adults: assessment and management.</i>

If the current fee for dialysis remained the same and the population of individuals requiring dialysis increased by 10% each year, the total expenditure on dialysis in 15 years would be approximately \$101M.



**Haemodialysis**  
170 patients per month  
\$27M per year

**Peritoneal Dialysis**  
20 patients per month  
\$2M per year

**Kidney Transplant**  
4 patients this year  
\$80k - 200k per transplant

The above figures reflect costs for the fiscal year ending March 2017.

The prevalence and incidence of CKD and ESRD are increasing rapidly, making the associated costs unsustainable. The following options are intended to provide a basis for consideration for health system policy changes that encourage more cost efficiency and greater accountability among patients and providers.

## PAYMENT FOR CARE

While peritoneal dialysis is paid as a monthly rate, limiting the possible claims per year to twelve, haemodialysis is paid as a fee per session. The estimated dialysis costs per year are based on an individual having 3 sessions per week. However, recent analysis of dialysis claims has shown that individuals are being dialysed more than 3 times a week which is increasing the cost per patient.

In the US, **BUNDLED PAYMENTS** are made for dialysis on a per claim basis but with caps on the number of claims per patient per week. At the moment it is capped at three unless there is documented justification for more than three<sup>7</sup>.

In the UK, **BLOCK PAYMENTS** are made to providers that are tasked with providing a specific type of care to a set population or geographic area<sup>9</sup>. This payment mechanism could be considered with local providers to care for the population with CKD and ESRD. The level of payment would be pre-determined and made on a regular basis (for example, quarterly) depending on the population projected to be served for that period.

## CLINICAL REGISTRY

Registries support a number of purposes such as, quality monitoring, outcomes measuring and ensuring cost-effectiveness of care.<sup>10,11</sup> Development of a CKD and ESRD registry would enable monitoring of disease progression within the population and better inform projections of dialysis use and expenditure. A registry could also incorporate risk factors such as diabetes and hypertension to enable more effective use of resources and targeted interventions in an effort to reduce the development of CKD and reduce the rate of progression to ESRD.<sup>10,11</sup>

## PROCUREMENT MANAGEMENT

Currently, local dialysis providers purchase equipment and supplies individually for their specific practice. The World Health Organization outlines a number of procurement options for pharmaceuticals and the concept of these methods can be applied to purchase equipment and supplies for these individual providers offering the same services. Collective procurement could be achieved via a **CENTRAL STORES SYSTEM** whereby a Government unit manages the process, or an **AUTONOMOUS SUPPLY AGENCY** where bulk procurement and distribution is managed by a private agency. The Government is typically represented on the autonomous supply agency's governing Board<sup>12</sup>.

## PREVENTIVE CARE

**CASE MANAGEMENT** provides patients with regular care and check-ups to ensure they are adhering to treatment and care plans as prescribed. Patients with CKD and ESRD typically have comorbidities which impact the progression of CKD and ESRD. Appropriate management of patient's conditions enables slower progression of disease and greater efficiencies in the use of health system resources.<sup>13</sup>

**NATIONAL PRACTICE GUIDELINES** provide standards for diagnosing and treating patients. With multiple providers involved in the management of individuals with CKD and ESRD, it is beneficial to the patient and the health system to have one set of rules for treating these diseases.<sup>14</sup>

Use of a **PROVIDER CHECKLIST** containing a set of agreed-upon steps for diagnosis of and interventions for CKD and ESRD would ensure appropriate prescription of treatments, improved outcomes and more efficient use of resources. The checklist is not meant to replace formal practice guidelines, but rather operate as a simplified version of guidelines that providers can easily refer to.<sup>15</sup>

1. Hill, Nathan et al. (2016). *Global Prevalence of Chronic Kidney Disease - A Systematic Review and Meta-Analysis*. PLoS One. 11(7): e0158765  
 2. Bendorf, Aric et al (2013). *Socioeconomic, Demographic and Policy Comparisons of Living and Deceased Kidney Transplantation Rates Across 53 Countries*. Nephrology. 18 (9): 633-640  
 3. Health Insurance Act 1970  
 4. Shinkman, Rob (2016). *The Big Business of Dialysis Care*. New England Journal of Medicine Catalyst.  
 5. Rettig, Richard (2011). *Special Treatment - The Story of Medicare's ESRD Entitlement*. New England Journal of Medicine. 364: 596-598  
 6. Government Publishing Office (2017). *Federal Register*. 82(210): 50740  
 7. Centers for Medicare & Medicaid Services (2018). *End Stage Renal Disease (ESRD) Prospective Payment System (PPS)*  
 8. Bermuda Health Council (2017). *2016 Actuarial Report for the Bermuda Health Council*. Bermuda Health Council  
 9. British Medical Association (2017). *Models for paying providers - Block contract*. British Medical Association.  
 10. Hoque, DME, Kumari V, Ruseckaitė R et al (2016). *Impact of clinical registries on quality of patient care and health outcomes: protocol for systematic review*. British Medical Journal Open. 2016;6:e010654  
 11. Gliksch RE, Dreyer NA, Leavy MB (2014). *Registries for Evaluating Patient Outcomes: A User's Guide (Internet) 3rd Edition*. Rockville MD, USA.  
 12. World Health Organization (2012). *Management Sciences for Health: Chapter 18 Managing procurement*. 18.6 Organisation and management of procurement and distribution functions.  
 13. Judd, Eric and Calhoun, David (2015). *Management of Hypertension in CKD: Beyond the Guidelines*. Advanced Chronic Kidney Disease. 22(2): 116-122.  
 14. Vest, BM et al (2015). *Chronic Kidney Disease Guidelines Implementation in Primary Care: A Qualitative Report from the TRANSLATE CKD Study*. Journal of American Board of Family Medicine. 28 (5): 624-631.  
 15. Fox, Chester and Vassalotti, Joseph (2014). *Checklists as Computer Decision Support Point of Care: A Step Forward in the Recognition and Treatment of CKD by Primary Care Physicians*. Clinical Journal of American Society of Nephrology. 9(9): 1505-1506