

# Renal Disease in the Caribbean

## The Disease of the Past, Present and Future

AK Soyibo<sup>1,2</sup>, L Roberts<sup>3</sup>, LL Douglas<sup>2,4</sup>, EN Barton<sup>1,2</sup>

### Disease Continuum

Chronic non-communicable diseases such as diabetes mellitus (DM), hypertension, obesity, cardiovascular disease (CVD) and chronic kidney disease (CKD) are the focus of global healthcare talk. The Caribbean has undergone the epidemiological transition from infectious diseases to non-infectious diseases. However, unless the Caribbean region is vigilant, it might see old infectious diseases returning to prominence. There has been increase in tuberculosis with the HIV epidemic, cholera has reared its head in Haiti and Cuba and there have been malaria outbreaks in islands where malaria was previously eradicated.

The leading causes of mortality and morbidity in the Caribbean are related to CNCs (1–5). Chronic kidney disease is a non-modifiable risk factor for cardiovascular disease, giving rise to added increased risk for mortality and morbidity. The relationship between CKD and CVD is not a simple linear one; there are several factors with varying degrees of relationships. The non-traditional risk factors associated with the presence of renal disease co-exist with other traditional cardiac risk factors such as hypertension, diabetes, dyslipidaemia and smoking, and increase the morbidity and mortality in patients with CKD. It cannot be overly emphasized that the management of chronic kidney disease pivots on prevention and slowing progression towards end-stage renal failure, and the treatment of acute renal failure is prevention.

This article highlights the key areas in the strategies to deal with renal disease in the Caribbean and some of the challenges faced.

### The Beginning

The initiation of haemodialysis in the Caribbean began in Jamaica in mid-March of 1970 after the return of a young and astute urologist, now Professor Lawson Douglas. The dialysis machine was the Kolf-machine. The first patient to under-

go haemodialysis treatment in Jamaica as well as in the Caribbean was a 13-year old girl with end-stage renal disease (ESRD) secondary to chronic glomerulonephritis. The dialysis machine was set up because of foresightedness of the senior medical officer (SMO) of Kingston Public Hospital (KPH) at that time, Dr Samuel Street. Later in September of the same year, the first patient to receive haemodialysis treatment became the first patient in the Caribbean to receive kidney transplantation. The kidney was retrieved from a deceased motor vehicle accident victim, who was ABO compatible with the recipient. There was no HLA-typing done at that time in Jamaica. The entire procedure took approximately three hours with immediate good outcome for the patient and the allograft. She, however, died subsequently from an anastomotic leak. In 1972, the first consultant nephrologist, George Nicholson, a native of Guyana who had received his medical training at Oxford University, England, arrived in Jamaica. He revamped the immunosuppression therapy and started a dialysis unit at the University Hospital of the West Indies (UHWI) in 1973.

Lawson Douglas and George Nicholson led the way in the Caribbean with dialysis and transplantation, both of which were to be expanded in Jamaica and later to Barbados and Trinidad and Tobago. Later in the 1990s, the dialysis unit at Cornwall Regional Hospital (CRH) was started. Scotiabank, Jamaica, had put together a team of Professor Everard Barton (originally from Tobago), Dr Hope Russell, Sister Daphne Bartley, an architect and an engineer to develop this project. Professor Nicholson, who later transferred to Barbados, also initiated dialysis there but he would travel to Jamaica quarterly to review the dialysis patients at KPH and only stopped in 1992 when Professor Everard Barton continued the tradition of going from the UHWI to KPH to assist that dialysis unit and manage transplant cases. Dr Winston Williams was to singlehandedly manage the renal service at UHWI for over a decade and a half after the departure of George Nicholson and Anthony Morgan from Jamaica. In Trinidad and Tobago in 1978, Dr John Hayes senior, the first nephrologist, initiated dialysis there. Hayes had an early demise; Dr Allan Patrick was trained to continue the work. About four years ago, Antigua and Barbuda experienced the return of a national, Dr Ian Thomas, a nephrologist who was trained at Jackson Memorial Hospital in Miami. He has continued the thrust towards advancing the renal care in Antigua and Barbuda. Everard Barton was to advise on the development of the renal unit in Anguilla, which was staffed by his first trainee Fellow in nephrology, Dr Nelson Iheonunekwu.

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From: <sup>1</sup>Department of Medicine, The University of the West Indies, Kingston 7, Jamaica, <sup>2</sup>Caribbean Institute of Nephrology, Kingston 7, Jamaica, <sup>3</sup>National Organ Transplant Unit, Eric Williams Medical Sciences Complex, The University of the West Indies, Mt Hope, Trinidad and Tobago and <sup>4</sup>Emeritus Professor, Department of Surgery, Radiology, Anaesthesia and Intensive Care, The University of the West Indies, Kingston 7, Jamaica.

Correspondence: Dr AK Soyibo, Department of Medicine, The University of the West Indies, Kingston 7, Jamaica, West Indies. E-mail: demoskey@hotmail.com

### The Present

Renal disease can be either acute (< 3 months duration) or chronic. Some causes are shared amongst both types. However, the emphasis on reducing the long-term effect of acute causes should always be borne in mind. The burden of CKD is enormous; reducing incidence and disease progression should be pivotal in the management of renal disease in Jamaica, as well as the Caribbean. Some causes that should be highlighted are those due to obstructive uropathy *eg* bladder outlet obstruction due to prostatomegaly, compression due to gynaecological diseases like uterine fibroids and in the paediatric population, persistent posterior urethral valves (6, 7). These conditions are potentially reversible causes of renal failure and should not be allowed to progress to chronic renal failure. One of the effective policies over the years, aimed at reducing the incidence of renal failure due to persistent posterior urethral valve in the paediatric male (6), is the screening of all males with first time urinary tract infection with an ultrasound evaluation of the genito-urinary system (6). The way forward is observing for fetal genito-urinary anomalies during pregnancy as part of fetal ultrasound screening. Invasive procedures to decompress the obstruction *in utero* can improve outcome. This modality of treatment is available in the Caribbean.

An annual international conference on nephrology and hypertension was started in 2009 through the founding of the Caribbean Institute of Nephrology (CIN) by Professor Everard Barton. Professor Lawson Douglas became one of the Directors of this institution. This is one medium geared towards educating healthcare professionals about management and advances in treatment of kidney disease. The International Society of Nephrology has supported the nephrology programme at UWI in a sister programme with the Department of Nephrology at the University of Michigan (Ann Arbor). This has facilitated training, continuing medical education meetings and research. Professors Akinlolu Ojo and Frank Brosius from Michigan and Professor Everard Barton and Dr Adedamola Soyibo have been instrumental in ensuring the deepening and growth of this collaboration. The Faculty of Medical Sciences, through The University of the West Indies (UWI), now offers a nephrology fellowship programme. This was initiated by Professor Everard Barton who spearheaded the development of the programme and syllabus that was accepted by UWI. Four nephrologists for the region have now been trained. The development of a Caribbean renal registry has given insight into chronic kidney disease in the Caribbean. There have been notable differences and similarities, both of which are significant. Professor Barton, working at the UHWI in Kingston, Jamaica, conceived the idea of the Caribbean Renal Registry (CRR) in 1999. Barton expressed this idea to the Caribbean Association of Nephrologists and Urologists (CANU) and proceeded with the Jamaican renal survey in 1999 and published the first documented crude prevalence of CKD in

Jamaica in 2004 (8). Other Caribbean countries were invited but this idea was met with challenges and uncertainties. Barton persisted and in 2006, he and his postgraduate student, Dr AK Soyibo, presented the first data on ESRD in six English-speaking Caribbean countries. Collaborators to this expanded registry came from Jamaica, Trinidad and Tobago, British Virgin Islands, Cayman Islands, Bahamas and Turks and Caicos (9). The report showed that diabetes mellitus, hypertension and chronic glomerulonephritis were the three commonest causes of ESRD in these countries. In 2007, the registry expanded from just dealing with ESRD to include the different stages of CKD (10), and Antigua and

Table: Countries that have contributed to the Caribbean Renal Registry

Country	Years contributed	RRT modality available
Antigua and Barbuda	2007–2012	HD
Bahamas	2006	HD, PD
Barbados	2006	HD, PD
British Virgin Islands	2006–2008	HD
Cayman Islands	2006–2007	HD
Jamaica	2006–2012	HD, PD, KT
Trinidad and Tobago	2006–2007	HD, PD, KT
Turks and Caicos	2006–2007	HD

RRT: renal replacement therapy; HD: haemodialysis; PD: peritoneal dialysis; KT: kidney transplantation

Barbuda joined at this stage (Table). The reports displayed significant differences in epidemiology and causes of CKD/ESRD in the Caribbean. The quest to standardize and to encourage the development of a national renal registry within each Caribbean country led to the development of an electronic format to the CRR.

The web-based Jamaican renal registry is a sophisticated surveillance tool tailor-made for the purpose with detailed input by Soyibo and Barton. Jamaica was the first to utilize this web-based programme to its fullest capacity. Other countries involved are Antigua and Barbuda and Tobago. The programme had been introduced to the CARICOM countries at various Caribbean Health Research Council (CHRC) meetings and chief medical officers (CMOs) of the English-speaking countries and Suriname gave full support. This programme has been embraced by the Ministry of Health (MOH) of Jamaica as one of the surveillance tools for CNCD in Jamaica. The United States Renal Data System has applauded its sophistication and ease of use.

The University Hospital of the West Indies has been instrumental in providing useful information on histology and treatment of kidney disease in Jamaica. Several publications and reports on causes of nephrotic syndrome and glomerular disease in Jamaica in both children and adults (11–15) were published with the great help of the renal pathologist, Professor Deepak Shah. There have been reports on treatment pattern of lupus nephritis in Jamaica by Dr

Winston Williams (16, 17) and several reports on histological trends and changes in causes of idiopathic glomerular disease and lupus nephritis (11).

Renal replacement therapy (RRT) is the modality of treatment for patients with ESRD. Though kidney transplantation is the modality of choice that offers the best quality of life, this form of RRT has its challenges in Jamaica. It has taken off in Trinidad and Tobago under the leadership of Dr Lesley Roberts and the support of the Ministry of Health, Trinidad and Tobago. In Jamaica, those who are privileged, (without the financial burden) and who have a donor, have been successfully transplanted abroad, mainly in the United States of America (USA). Therefore, haemodialysis (HD) remains the long-term treatment modality of choice in Jamaica and some other Caribbean islands. Haemodialysis treatment has undergone significant growth in Jamaica. Before 2005, there were only two government HD centres in Jamaica, five privately operated units and the quasi public UHWI centre. Currently, there are 17 haemodialysis centres in Jamaica, though not evenly distributed throughout the island. Most centres are located in Kingston and St Andrew and, to a lesser extent, the parishes of Manchester and St James. There has been an addition of two major government hospitals with HD centres since 2009: Spanish Town Hospital and Mandeville Regional Hospital. The latter was spearheaded by the Department of Medicine of the UHWI, under the leadership of Professor Everard Barton with significant funding from the Culture, Health, Arts, Sports and Education (CHASE) Fund. There was also the development of renal care and dialysis for the Roman Catholic Board at the St Joseph Hospital and the Diabetic Association of Jamaica by Professor Barton in collaboration with these entities. Since the abolition of the 'user fee' in Jamaica in 2008 in (public) Government hospitals, the burden of treatment of CKD/ESRD patients has shifted from solely patient borne to some of the burden being shared by the government. Haemodialysis treatment is free to patients at all government hospital dialysis centres, and some of the drugs that have been cost-prohibitive to patients are now available. One cannot forget the contributions from the National Health Fund (NHF), CHASE Fund, the Jamaica Constabulary Force, various ministries within the government and other non-governmental organizations (NGOs), which have contributed vastly to the affordability of HD treatment to patients in Jamaica. Mandeville Regional Hospital is a site of one of the voluntary outreach renal clinics conducted monthly by Professor Everard Barton and Dr AK Soyibo over the last 11 years. The number of patients accessing HD treatment is increasing, but the number of those who cannot afford it and cannot get on the government service is growing exponentially.

Peritoneal dialysis (PD) is reported by countries that practice it as a cheaper alternative to HD with equally good, if not better, quality of life. Professor Barton started the chronic PD unit at UHWI in 1999 and Cornwall Regional

Hospital followed. The Kingston Public Hospital offers acute intermittent PD to its ever-growing CKD/ESRD population as temporizing measures. Mandeville Regional Hospital, since 2011, offers chronic PD to a paediatric group, also initiated by Professor Barton and Dr Soyibo. The practice of PD in Jamaica can only be viewed as a hybrid of the true type that should be delivered. Significant cost constraint and social and environmental factors are major limiting parameters. Unlike HD, PD treatment is not offered by private organizations and the reasons for this are numerous and are also affected by patient preference. Best practice of PD is seen in other Caribbean countries like Trinidad and Tobago and the Dominican Republic. There needs to be a greater thrust in finding more economically viable alternatives for the fluids used in PD (and HD). One such option is the production of these fluid and other consumables locally in the Caribbean.

Trinidad and Tobago has the most active transplant programme presently in the Caribbean and over the last six years has transplanted 87 patients, initially with the help of Transplant Links, England and the Donation and Transplantation Institute of Barcelona, Spain. Jamaica was the leading pioneer in the area of kidney transplantation but there have been challenges met with organ donation, immunosuppression and laboratory support.

Chronic illnesses can be physically debilitating and a source of financial and psychosocial strain; CKD/ESRD is no exception. Of growing concern is the rate of unemployment among ESRD patients after diagnosis and initiation of dialysis treatment, especially when many of these are capable of fulfilling their employment obligations. There is research on the way, evaluating some of the psychosocial factors in patients with ESRD.

### **The Future**

Chronic kidney disease and its public health impact will require an integrated and more specialized approach both within each territory and among the Caribbean countries. A wide spectrum of personnel will need to be involved including nephrologists, internists, urologists, transplant surgeons, public health nurses, nutritionists, epidemiologists, economists and health planners. Screening of high risk individuals early must be implemented.

Emerging evidence shows that there is an increase in the incidence of acute kidney injury in children (18). There are documented changes in the pattern of causes of acute kidney injury in children and there are very limited data from the Caribbean on acute kidney injury (AKI) in this population, therefore a thrust towards establishing a surveillance system that will capture this is needed. One can "piggyback" on the excellent surveillance system developed in Jamaica by public health specialists.

A Jamaica renal biopsy registry is well on the way and it will serve to describe the epidemiology of the primary renal disease, which may be the cause of CKD. It will include the incidence, prevalence and trends in epidemiology and des-

cribe the clinical features, prognosis, complications and risk factors for complications. Such an initiative should be duplicated by all of the other Caribbean islands so as to determine their respective epidemiological patterns. Special emphasis should be placed on lupus nephritis, especially in the Jamaica and Trinidad and Tobago populations.

Transplantation must become the preferred modality of RRT. It is the most cost-effective. Among the limiting factors is the shortage of organs, and organ sharing between Caribbean countries must be developed. All the Caribbean countries must endeavour to work through the CARICOM medical forum to raise the transplantation genre through improving, for instance, laboratory support, making pharmaceuticals more affordable and providing the necessary expertise when required through pooling of resources. Nephrology service and care of renal patients should be available in all Caribbean countries.

The psychosocial impact on patients with CKD/ESRD and their relatives is tremendous. There needs to be a holistic approach to the management of CKD/ESRD and as such support centres, groups such as NGOs, community-based organizations and organized institutions such as CIN and renal foundations would need to play a critical role. There needs to be a programme developed to facilitate the transition with which most CKD/ESRD patients are faced. The challenges and coping mechanisms of patients, and their relatives, need further evaluation.

There is dire need to slow this disease continuum and this lies in early diagnosis, regular patient follow-up and primary and secondary prevention of kidney disease.

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