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**Summary:** In Africa, the combination of noncommunicable diseases, infectious diseases, exposure to environmental toxins, and acute kidney injury related to trauma and childbirth are driving an epidemic of chronic kidney disease and end-stage renal disease (ESRD). Good registry data can inform the planning of renal services and can be used to argue for better resource allocation, audit the delivery and quality of care, and monitor the impact of interventions. Few African countries have established renal registries and most have failed owing to resource constraints. In this article we briefly review the burden of chronic kidney disease and ESRD in Africa, and then consider the research questions that could be addressed by renal registries. We describe examples of the impact of registry data and summarize the sparse primary literature on country-wide renal replacement therapy in African countries over the past 20 years. Finally, we highlight some initiatives and opportunities for strengthening research on ESRD and renal replacement therapy in Africa. These include the establishment of the African Renal Registry and the availability of new areas for research. We also discuss capacity building, collaboration, open-access publication, and the strengthening of local journals, all measures that may improve the quantity, visibility, and impact of African research outputs.

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The World Health Organization (WHO) estimates that approximately 60% of global deaths are caused by noncommunicable diseases (NCDs),<sup>1</sup> with most occurring in low- and middle-income countries (LMICs). Africa is a continent consisting of 54 low- and middle-income countries, home to a population of 1.17 billion people. Many of these countries are facing the triple burdens of infections, NCDs, and injuries. There are insufficient studies on NCDs in Africa and there have been calls for more research to be conducted in this area.<sup>2,3</sup> Based on the available evidence, NCDs already are responsible for more than three quarters of deaths in most North African countries (Fig. 1),<sup>4</sup> and although communicable diseases still predominate in sub-Saharan African regions, NCDs have been predicted to become the leading cause of death by 2030.<sup>5</sup>

In LMICs, a disproportionate number of NCD deaths occur among younger people<sup>4</sup> who are at the peak of

their economic productivity. This has serious economic consequences for families and communities. Health care costs for chronic diseases can drain household resources and result in the loss of breadwinners, thereby contributing to the persistence of poverty and the lack of economic growth in many African countries.

The World Health Assembly has endorsed the WHO Global Action Plan for the Prevention and Control of NCDs 2013 to 2020.<sup>6</sup> The targets for this important initiative include a 25% reduction in premature mortality from NCDs by 2025. Although kidney disease is not mentioned explicitly, the actions that are planned have the potential to make a significant impact on the burden of chronic kidney disease (CKD). The modifiable risk factors for NCDs that will be targeted are tobacco use, physical inactivity, unhealthy diet (including the reduction of salt intake), and the harmful use of alcohol. These behaviors typically are established during adolescence or young adulthood, and therefore interventions aimed at young people are especially important in Africa, which has the world's youngest population.

### AFRICA'S EPIDEMIC OF CHRONIC KIDNEY DISEASE

The NCD epidemics of diabetes and cardiovascular disease are well known, but the associated epidemics of CKD and end-stage renal disease (ESRD) have not received similar attention. In Africa, the combination of large increases in NCDs, a high burden of infectious diseases, exposure to numerous environmental toxins, and high rates of acute kidney injury related to trauma and childbirth mean that the incidence of CKD and

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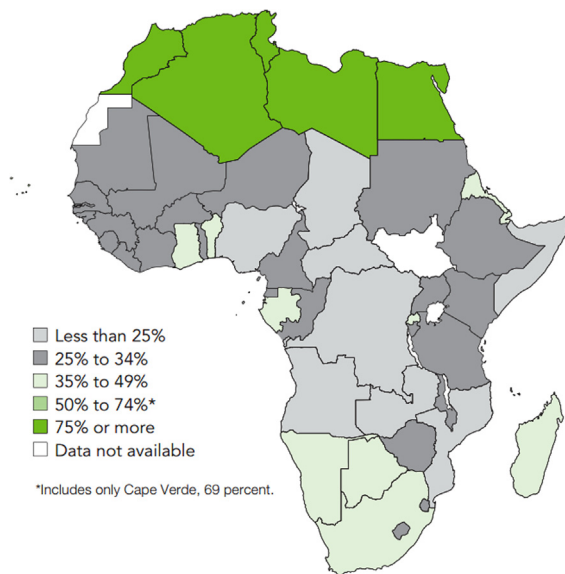
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**Figure 1.** Heat map of deaths caused by noncommunicable diseases in Africa in 2012.<sup>4</sup>

ESRD is likely to be at least as high as is reported elsewhere.<sup>7,8</sup> Diabetic nephropathy is a leading cause of ESRD globally, and also in Africa.<sup>9</sup> The number of adults with diabetes in sub-Saharan Africa is projected to increase from 19.8 million in 2013 to 41.5 million in 2035.<sup>9,10</sup> Other important risk factors for CKD in the African region include hypertension and infection-related renal disease. The number of people with human immunodeficiency virus (HIV) in sub-Saharan Africa exceeds 25 million,<sup>11</sup> and this contributes greatly to CKD in this region.<sup>12</sup>

The worldwide prevalence of CKD in adults is approximately 10% to 13%,<sup>13,14</sup> but there are little

published data from most African countries.<sup>12,15,16</sup> A recent systematic review<sup>12</sup> highlighted the need for more studies of good quality from African countries. Based on 18 medium-quality and 3 high-quality studies, the population prevalence of CKD in sub-Saharan Africa was estimated to be 13.9%.<sup>12</sup> This estimate summarized data on 44,145 individuals from 13 countries. However, these crude prevalence rates mask a higher rate of CKD in African countries. For example, when the age distribution of the populations is taken into account ([www.wdi.worldbank.org](http://www.wdi.worldbank.org)), the crude prevalence of CKD in South Africa would be expected to be only two thirds that of the United Kingdom if it had the same population age distribution.

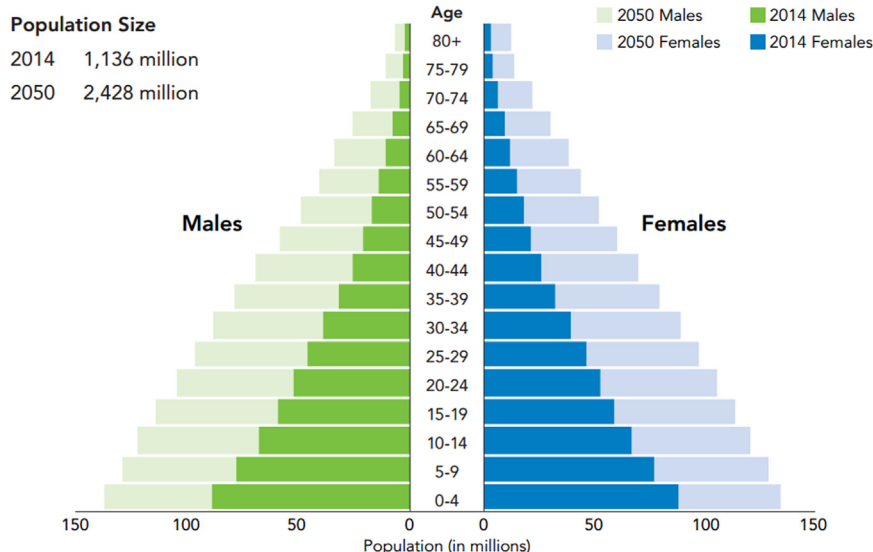
Approximately 360 million Africans are between the ages of 10 and 24 years (Fig. 2).<sup>4</sup> By 2050, they will have aged and, if they develop NCDs at the current rate, this will place a huge additional burden on poorly resourced health systems.

The most serious sequelae of CKD are heart disease, stroke, and progressive loss of renal function, with development of ESRD. Again, there is a dearth of good data from most African countries. The annual incidence of ESRD in North African countries has been estimated at 150 per million population (pmp).<sup>17,18</sup> Anand et al<sup>19</sup> modeled the incidence of ESRD in developing regions and predicted an annual incidence of 239 pmp in people with diabetes and hypertension living in sub-Saharan Africa.

## RENAL REPLACEMENT THERAPY IN AFRICA

Renal replacement therapy (RRT) in the form of dialysis or transplantation is the treatment for ESRD.

**Population Pyramid, Africa: 2014 and 2050**



**Figure 2.** Population pyramid for Africa.<sup>4</sup>

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