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## Cardiovascular disease and global health: a perspective from the global South

**BACKGROUND**

Global health simply refers to the health of populations in a global context. Global health has been defined as an “area of study, research and practice that focuses on improving health and achieving equity in health for all people worldwide”.<sup>(1)</sup> Scholarship in global health often focuses on worldwide health improvement, reduction of disparities, and protection against global threats that disregard national borders. Global health can be measured as a function of various global diseases and their prevalence in the world and threat to decrease life in the present day. Importantly, global health must not be confused with public health (defined as the science of protecting and improving the health of communities through education, policy making, health promotion and research for disease and injury prevention) or international health (defined as the branch of public health that focuses on low- and middle-income countries [LMICs] receiving foreign aid from high-income countries [HICs]). Table 1 shows the abbreviations.

The predominant agencies associated with global health are the World Health Organisation (WHO) and the United Nations (UN). The UN has played a critical role in encouraging cross-sectoral collaboration to address global health and its underlying socioeconomic determinants through the declaration of the Millennium Development Goals (MDGs) in 2000 (Figure 1), and more recently (2015), the Sustainable Development Goals (SDGs) (Figure 2).

**TABLE 1: Abbreviations.**

AIDS	Acquired immunodeficiency syndrome
CVD	Cardiovascular disease
HICs	High-income countries
LMICs	Low- and middle-income countries
MDG	Millennium Development Goals
NCDs	Noncommunicable diseases
SDG	Sustainable Development Goals
UHC	Universal healthcare
UN	United Nations
WHO	World Health Organisation



FIGURE 1: Millennium Development Goals.



FIGURE 2: Sustainable Development Goals.

Inspired by unprecedented improvements in human health and development in recent decades, our world has embarked on a quest that only a generation ago would have been considered unreachable: achieving sustainable health and development for all.<sup>(2)</sup> Improving the health and wellbeing of the world's people is at the core of the SDGs, reflected in targets that call for ending the epidemics of acquired immunodeficiency syndrome (AIDS), tuberculosis, and malaria; achieving enormous improvements in maternal and child health; and tackling the growing burden of noncommunicable diseases (NCDs), particularly due to cardiovascular disease (CVD). Attaining universal health coverage (UHC) is the means by which these ambitious health targets are to be achieved.<sup>(2)</sup>

While SDGs may reflect an unprecedented level of global solidarity and resolve, the trends that increasingly define our world in 2020 are completely inconsistent with the spirit of the SDGs. The

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current coronavirus pandemic has exposed weaknesses in global health systems and governance and worsened disparities amongst countries as they compete for limited resources – including personal protective equipment and other medical technologies. We have witnessed flagrant racism against Africans in China and other parts of the world. SARS-CoV-2 infections have devastated economies leading to the loss of hundreds of millions of jobs globally and impacting negatively on the health of people who are unable to access medical care, particularly those with chronic conditions. Even before the social, economic and health crisis caused by COVID-19, we witnessed a retreat in democracy, with declining respect for civil society and human rights. Immediately after the launch of the SDGs, official development assistance for health stalled, as inward-looking nationalism displaced recognition of the need for global collaboration to address shared challenges. The loss of momentum on global health ignores the urgent need to strengthen health systems to address the steady growth of NCDs, which now account for 7 of 10 deaths worldwide.<sup>(2)</sup>

Sebastian Taylor argues that global health is increasingly a widely invoked and powerful discursive construct. From an epidemiological perspective, global health may be characterised by health issues whose causes or redress lie outside the capability of any one nation state. From a globalisation perspective, fundamental neoliberal norms that underpin contemporary economic globalisation – in particular, the imperative of growth, and the meaning of inequality and poverty – present profound challenges for global health. Comprehending global health requires a nuanced understanding of domestic policymaking within national government systems, the intersection of health with foreign, trade, development and security agendas and drawing on international relations theory, public policy, political science and institutional ethnography. Without proper governance, global health is emerging as “a new terrain on which older contests – of ideological interpretation, geopolitical interest, empirical method – are played out. In its best form, global health offers real opportunities for more collective, equitable health thinking and action”.<sup>(3)</sup>

### **A HISTORY OF GLOBAL HEALTH**

Global health is not a new discipline. Lessons learnt from the Broad street cholera outbreak in 1854 were crucial to the understanding of disease epidemiology, applicable today. Microorganisms causing malaria and tuberculosis were identified in 1880 and 1882, respectively. Discoveries of the Bacille Calmette-Guerin vaccine and penicillin in the 1920s and eradication of smallpox in 1977 increased the expectation that many global diseases could be eradicated. Global collaboration in health, politics and economics was substantially increased with the establishment of the UN and World Bank in 1945. Jan Smuts drafted the charters of the League of Nations and the UN. The WHO was founded in 1948 by member states of the UN. The WHO published its global list of essential medicine in 1978, and, in the same year, the Alma Ata declaration underlined the importance of primary healthcare as a global health approach.

At the UN summit in 2000, the 8 MDGs were launched which reflected the major challenges facing human development globally. By 2015, it was clear that we had failed in the MDG quest, with health and economic disparities widening between the global North and global South, with many countries reporting regress on many of the MDG measures, and with corruption and civil unrest in the global South benefiting countries in the global North. In adopting the SDGs in 2015, UN member states set the world on a quest without precedent in human history: SDGs elevate global health and development aspirations, and envision a world that is far more prosperous, far more secure, far more healthy, and far more equitable than it has ever been, where human rights and dignity are universally respected, and where human development unfolds in a manner that preserves and protects the natural environment.<sup>(2)</sup> Yet, by 2016, prospects for achieving many of these visionary aims had dimmed, as the world became more authoritarian, repressive, and suspicious of international cooperation.

In the past 3 decades, global health has been firmly established as a discipline, with every major university in the global North establishing a global health institute. These institutes have partnered with universities and civil society groups in the global South. Yet, the investment in salaries, students trained, and papers published have almost largely benefited institutions in the global North, with few tangible benefits for the global South. This had led to a view of global health as being a new form of imperialism by countries in the global North.

Many have argued that the coronavirus pandemic has starkly revealed the fallacy of global health. Many nations in the global South are drowning in debt with fragmented health systems ill-equipped to respond to the challenges imposed by SARS-CoV-2 infections, while countries in the global North have been able to unlock trillions of dollars to build new hospitals and to keep economies alive. Similarly, in a country like South Africa with the highest Gini coefficient globally, there are endless examples of how the inequality between affluent and indigent members of our society has been flagrantly unmasked.

### GLOBAL HEALTH AND CARDIOVASCULAR DISEASE IN AFRICA

NCDs are the leading cause of death worldwide; and of these CVD is the leading cause of morbidity and mortality globally, accounting for 46.2% of NCD deaths.<sup>(4)</sup> Eighty five percent of all CVD-related deaths occur within LMICs.<sup>(4,5)</sup> Hypertension, cardiomyopathy, rheumatic heart disease and stroke account for most of this CVD mortality in sub-Saharan Africa (SSA).<sup>(5)</sup> Substantial resources and financial investments are required for the prevention and treatment of CVD, and many patients in LMICs are unable to access therapeutic strategies considered standard of care in HICs.<sup>(6)</sup> SSA has 15% of the world's population and yet accounts for 1% of the global expenditure on healthcare. The rapid population growth driven by decreasing mortality and high fertility will change Africa's population pyramid and will have far-reaching implications for disease burden and provision of healthcare, in particular for CVD. Hence, multiple calls have been made for CVD to rise in priority on the global health agenda.<sup>(7)</sup> The WHO and many other societies have emphasised the need for global health research, particularly in CVD.

The need for CVD researchers and healthcare workers in SSA does not match the workforce capacity at present. Research and fellowships by academics and postgraduate students from the global North have tended to fill this void, with no clear benefits for health systems in many African countries. It is imperative that countries in SSA articulate their own priorities and strategies for dealing with prevalent CVD, rather than having these imposed upon them by individuals and institutions in the global North. A major challenge is that most funding for research and programmatic approaches comes from countries in the global North, and the requests for applications often speak to the interests and strategic priorities of these countries. Therefore, African governments and industry also need to contribute to driving scholarship with an African agenda.

Global health in cardiology needs to be understood in the context of current global cardiovascular health priorities. Significant barriers to estimation of CVD exist in SSA, including the lack of vital registration systems in most countries. Modelled estimates based on available verbal autopsy and vital registration data suggest higher rates of CVD in eastern and central SSA in comparison with western and southern SSA, although the uncertainty intervals are wide. In general, verbal autopsy data suggest that 9 - 13% of deaths are attributable to CVD. Stroke, hypertensive heart disease and cardiomyopathy represent a much larger proportion of total death than in other regions of the world. Reflecting higher all-cause mortality and shorter lifespans overall, the mean age of death attributable to CVD in SSA in 2010 was the youngest in the world at 64.9 years, compared with 67.6 - 81.2 years for the rest of the world.<sup>(8)</sup> Table 2 shows some of the key gaps in knowledge that need immediate answers in order to plan evidence-based

**TABLE II: Key challenges, knowledge gaps and research priorities in SSA.**

Limited data on disease epidemiology and burden of disease.	Urgently need population-based studies; need to decrease reliance on hospital-based data.
Limited data on variation in cardiovascular risk factors.	Need expansion of household health examination surveys, with wider sharing of results; need broader collection of anthropometric and biomarker data including blood pressure, glycosylated haemoglobin and cholesterol levels; need renewed efforts for population-based surveillance of CVD events, including myocardial infarction and stroke.
Limited data on cardiovascular disease outcomes.	Need longitudinal/cohort studies to assess CVD outcomes from different diseases amongst Africans; need more studies on determinants of outcomes for CVD in Africa.
Limited data on mortality from cardiovascular disease, particularly in the poorest regions.	Need increased national investment in sample and comprehensive vital registration systems; need sharing of best practices for data collection and verbal autopsy; need more efforts to improve ascertainment of death.
Limited data on optimal strategies for cardiovascular disease management.	Greater need for national and regional registries and randomised controlled studies to test different therapies for CVD in Africans.
Limited data on cost-effectiveness of interventions.	Need studies on cost-effectiveness of various interventions on CVD, particularly those focused on primary healthcare.
Changes in cardiovascular mortality are more complex than suggested by a stepwise model of epidemiological transition.	National health planning needs to consider a broad range of contextual factors, including local patterns of risk, policies that influence health, and current health system arrangements; need formal CVD costing studies in LMIC to address financial risk and health system efficiencies; need improved cross-cultural measures of disability related to CVD.
Poor coordination of various sources of data.	Need more population and health information in the public domain; need better governmental, international and intersectoral collaboration on coordination of different sources of data needed to inform health strategies; need different types of data on CVD including household surveys, census, health facility data, disease surveillance data, population health studies, policy data and research studies.
Infrequent analysis of population health data.	Ministries of Health in African countries need to conduct periodic health programme reviews to establish whether policies are producing the desired results; need to regularly undertake assessments of incidence, distribution and control of CVD; need frequent analysis of collected data; need coordinated and systematic analysis and review of existing data at regular intervals.
Poor quality data structures.	Need to ensure sufficient complexity of data with periodic population, register and health surveys consisting of quantitative, qualitative and geospatial data that is voluminous and comprehensive, requiring well-trained staff with appropriate analytical skills.
Poor data quality	Need to strengthen health systems; need to improve accuracy, timing, utility of data; need to improve analytic capacity; need to minimise missing data points and errors in data entry and computation; need to minimise errors leading to wrong results, wrong conclusions and wrong recommendations; need to strengthen national statistics offices.
High costs of data collection, handling, archiving and analysis.	Need statistical offices with necessary technological, financial and human resource capacities to collect, process and disseminate required data in a timely fashion.
Limited funding to support research from African governments.	African governments must consider ring-fencing 1 - 2% of their GDPs to support collection and curation of health data; need greater domestic budgets for CVD research; need to trial pay-for-performance agreements with donor funding; consider public-private partnerships.
Suboptimal use of existing technologies to enhance data collection, coordination, architecture, quality and cost.	Need appropriate use of existing technologies to enhance utility of existing data to inform policies

Adapted from Roth GA, Huffman MD, Moran AE, et al. Global and regional patterns in cardiovascular mortality from 1990 - 2013. *Circulation* 2015;132(17):1667-1678.

interventions. Africa-specific data are needed to inform, to plan policy making, for accurate decision-making, for cost-efficiency, to reduce risk and for agility in health systems.

Global health is important in cardiology as international collaboration on research and programmatic approaches is increasingly the norm. In addition, the ease of international travel has made it possible for many cardiology fellows to train in other parts of the world, but also for individuals with cardiovascular disease to present in clinics all over the world. Increasingly, the importance of nurturing a cadre of cardiology providers who can prevent and treat cardiovascular diseases in international settings is recognised. Furthermore, forming new global cardiovascular disease research collaborations may lead to collaborative problem solving and development – forming such global cardiovascular research and mentorship relationships as a trainee provides one with a broader network of collaborators at a critical time in the transition to an academic early-career cardiologist. However, such opportunities for training and fellowships in global cardiovascular health have largely benefited students from HICs, as relatively few students from LMICs are able to afford and take up opportunities for exchange.

It has been stated that global health training and exposure engenders humility, empathy and respect in building trust with patients amongst trainees.

There is an urgent need for the establishment of more African institutes of research to set priorities and lead programmes of scholarship on African cardiovascular epidemiology, population health, basic science, clinical investigation and randomised clinical trials for optimal therapeutic approaches. There is also a greater need for collaboration between scientists on the African continent to work collaboratively to solve Africa's fundamental challenges.

In this issue of the Journal, we continue our collaboration with the European Society of Cardiology on key publications in 2019 in the European Heart Journal. A review and summary of key publications related to acute coronary syndromes,<sup>(9)</sup> coronary interventions,<sup>(10)</sup> aorta and peripheral circulation,<sup>(11)</sup> and arrhythmia and pacing<sup>(12)</sup> are included in this issue. This issue also contains pieces on establishing new clinical centres, valvular heart disease, pericardial disease and endomyocardial fibrosis, all which have substantial relevance for cardiovascular global health in Africa.

Enjoy reading.

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