Global Capacity Building for Global Challenges in Cardiovascular Disease

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Global cardiovascular challenges require global solutions that should comprise building capacity in health care and public health. Even though manpower by itself will not suffice to eventually conquer the problem and economic, political, public health and technological solutions need similar attention, programs to train health professionals and researchers and create awareness are key. In this issue of Global Heart, Lijing and coworkers present their experiences in developing the capacity for sustained high-quality research at academic institutions around the world [1]. They aim at early career investigators who have completed their terminal degrees. Experience is drawn from three recent global cardiovascular health programs: 1) the Global Health Initiative supported by the National Heart, Lung, and Blood Institute of the U.S. National Institutes of Health and the United Health Group, involving 11 Centers of Excellence on noncommunicable diseases (cardiovascular and lung diseases in 10 low- and middle-income countries); 2) the World Heart Federation Salim Yusuf Emerging Leaders program, aiming to create a global cadre of promising early to midcareer individuals who will contribute to improving global cardiovascular health; and 3) Hypertension Outcomes for Translational Research within Lower Middle-Income Countries and T4 Translation Research Capacity Building Initiative in Low-Income Countries (TREIN) sponsored by the National Heart, Lung, and Blood Institute. They identify three key pillars for supporting the next generation of global cardiovascular health researchers: companionship, light, and fuel. Companionship provides a value that "we are in it together," binding all individuals travelling along a similar journey and toward a common goal. Using the analogy of a journey, good mentors provide light along the way whose successes can serve as lighthouses and beacons while illuminating the paths of early career investigators. Finally, seed grants provide the fuel needed to keep going. For research capacity building, there is nothing that works better than actually doing research, preferably in a learning-by-doing fashion.

Fuel is important to make research happen and is an essential condition to generate the knowledge necessary to guide and implement general and local solutions to promote health. To prepare for the next global health objectives, the Global Alliance for Chronic Disease (GACD) brought together local funders to combine forces to enlarge the network of researchers in non-communicable diseases (NCDs). With a strong focus on getting knowledge translated to practice, the GACD was formed from its precursor, the Grand Challenges Global Partnership, funding implementation science research with the aim of improving uptake and scale-up of well-evidenced approaches to prevention and control of NCDs, rather than developing new treatments. Webster and coworkers report on the first unified funding call for implementation research projects, which focused explicitly on implementation and evaluation of evidence-based approaches to address the burden of hypertension in LMICs and in indigenous (in the case of Australia and Canada) settings [2]. According to the report, the legacy of the GACD Hypertension Program is not only the relationships and friendships formed, but also the documented contribution to the field of implementation science in NCDs; provision of supported learning opportunities regardless of career stage, discipline, or country of residence; and unprecedented access to funders, policymakers, and other decision makers. A real-life example of the importance of companionship, light and fuel.

Hypertension is increasingly recognized as a major cause of cardiovascular mortality and morbidity in low-income countries, but little is known about how to face this common risk factor with limited economic and professional resources, particularly in remote rural areas. Moreira and coworkers describe findings in a prospective cohort study of a program of hypertension diagnosis, treatment and follow-up from 2004 to 2015 in a health system in Ecuador, carried out mainly by "health promoters." [3] All hypertensive patients were encouraged to reduce their salt intake and, if appropriate, their caloric intake. Hypertensive patients at higher risk were candidates for a drug prescription. Diuretics and calcium antagonists were the preferred antihypertensive drugs. Following a long period of drug distribution with the cooperation of a few foreign institutions based on a symbolic monthly payment of US$1, since 2008 antihypertensive treatments have been free as part of the newly established national health service. The results can be summarized as follows: in a poor disadvantaged area, a strategy of control based mainly on the involvement and responsibility of community health promoters (with health professionals backing them for quality control more than direct actors) is capable of ensuring compliance to the recommended protocol in the long term.

As shown in the example of Ecuador, apart from the thoughtful use of human resources, access to medication is of major importance. Reality is still grim. This was why the WHF made access to essential medicines and technologies the theme of the Third Global Summit on Circulatory

Dr. Grobbee has reported that he has no relationships relevant to the contents of this paper to disclose.
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GLOBAL HEART

VOL. 14, NO. 4, 2019
ISSN 2211-8160/$36.00.
https://doi.org/10.1016/j.gheart.2019.10.005

Health, convened in Dubai in December 2018. Those present called on leaders from academia, policymaking, and global health to look afresh at the issues of access, develop nationally relevant solutions, and explore ways in which we can implement them. In doing so, quoting from the recent Lancet Commission on access to essential medicines [4], it called on governments and national health systems to provide adequate financing to ensure inclusion of essential medicines in public benefit packages, provided by the public sector and all health insurance schemes and to implement policies that reduce the amount of out-of-pocket spending on medicines. It urged the international community to fulfil its obligations on human rights, supporting governments in LICs to finance a basic package of essential medicines for all, if they are unable to do so domestically [5].

The double or triple burden of disease is well recognized as complicating factor in many LMIC's and two papers in this issue of Global Heart address that issue. Idris and coworkers, in a unique study in anti-retroviral treatment (ART) exposed HIV positive children in Indonesia, demonstrate that ART-exposed HIV infection is associated with higher estimated pulmonary artery pressure [6]. Reduced right ventricular (RV) systolic function is seen in ART-naïve HIV infection. Lower respiratory tract infection partly explains lower systolic RV function in ART-naïve relative to ART-exposed HIV infection. Of note, the paper is dedicated to the first author, Nikmah Idris, a bright young clinical scientist from Indonesia, who tragically died August 4, 2019. In a second paper on the relation between HIV infection and vascular disease, Kentoffio and coworkers, report on the UGANDAC (Ugandan Noncommunicable Diseases and Aging Cohort) study, a prospective study of adult HIV patients (n = 155) and age- and sex-matched HIV-negative comparators (n = 154) [7]. In this study no statistically significant differences in the prevalence of abnormal or ischemic ECGs were observed among middle aged, ambulatory HIV positive patients on antiretroviral therapy compared with HIV-negative individuals. However, there was a significantly higher prevalence of ischemic ECGs among women compared with men, irrespective of HIV serostatus. The latter finding confirms previous reports from Sub Saharan Africa suggesting a higher prevalence of cardiac risk factors in women, including hypertension, obesity and angina.

Living in a neighbourhood with a low socioeconomic context may increase the risk of coronary heart disease. However, few studies have explored the impact of neighbourhood characteristics on subclinical atherosclerosis, and their role as a risk factor for cardiovascular disease has not yet been studied in poor countries. Willets and coworkers report on the association between perceived neighbourhood characteristics and subclinical atherosclerosis in a large sample of adults, using cross-sectional data from the ELSA-Brasil (Brazilian Longitudinal Study of Adult Health) [8]. Their findings support the view that the perception of living in a more walkable environment and in a neighbourhood where people witness fewer violent episodes can provide protection on the early phases of the atherosclerosis process. Less stress and the practice of physical activity may explain the protection.

Global cardiovascular challenges require global solutions that should comprise building capacity in health care and public health. Vervoort, in a letter to the editor, calls attention to a perhaps somewhat neglected discipline with, yet, a potentially important role: cardiac surgery [9]. Although a majority of CVD can be prevented, many cannot, and a hypothetical vacuum in which complete prevention is achieved seems improbable. Without addressing the entire spectrum of curative care services for complex CVD, millions of individual— fathers, mothers, children—will continue to die from surgically treatable CVD. Here, large disparities remain. Low-income countries possess only 0.04 cardiac surgeons per million population, compared with 7.15 per million population in high-income countries. In a combined effort with the world's leading cardiac surgical societies, the WHF has established the Cardiac Surgery Intersociety Alliance to increase cardiac surgical volume in LMIC. This recognition is an important first step in supporting low-volume cardiac centers in LMIC to increase their autonomy and surgical volume.

We are pleased to offer another issue of the prime Journal for Global cardiovascular research and education. I trust you will find this of interest for your work and look forward to welcoming you as an author or a reviewer for the Journal. We are always open to ideas and suggestion raising the relevance and impact of Global Heart.

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