

EDITORS' PAGE



The Global Burden of Cardiovascular Diseases and Risk Factors 2020 and Beyond



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Cardiovascular diseases (CVDs), consisting of ischemic heart disease, stroke, heart failure, peripheral arterial disease, and a number of other cardiac and vascular conditions, constitute the leading cause of global mortality and are a major contributor to reduced quality of life (1,2). In 2017, CVD caused an estimated 17.8 million deaths worldwide, corresponding to 330 million years of life lost and another 35.6 million years lived with disability (1,2). Taken together with data on CVD and risk factor prevalence, these summary measures of health can be invaluable for cardiologists, other clinicians, and public health experts. They provide crucial population-level information that can guide action for CVD and risk factor prevention, treatment, and control at global, regional, national, and subnational levels.

Trends in these data provide a useful gauge of where in the world CVD mortality and burden are increasing or declining, and where progress has stalled. For example, nearly 80% of global CVD deaths occur in low- and middle-income countries

(LMIC) where CVD and risk factor burden are on the rise as a result of an ongoing epidemiological transition (3-5). CVD mortality is more common in middle-income countries compared with high- or low-income countries. But how are we monitoring these global and regional trends, and how are they informing cardiology practice, health policy, and clinical research?

Until recently, comprehensive assessments of summary measures of health and related data from internally consistent, systematic, and comparable methodology for all diseases, injuries, and risk factors were not readily available. The GBD (Global Burden of Disease) Study (6), launched by the World Bank and the World Health Organization in 1991, to address this challenge has done so in 6 cycles of GBD estimates published for the years 1999 to 2004, 2010, 2013, 2015, 2016, and 2017 (7,8). The global, regional, and national burden of CVD for 10 causes for 1990 to 2015 were published in *JACC* (9).

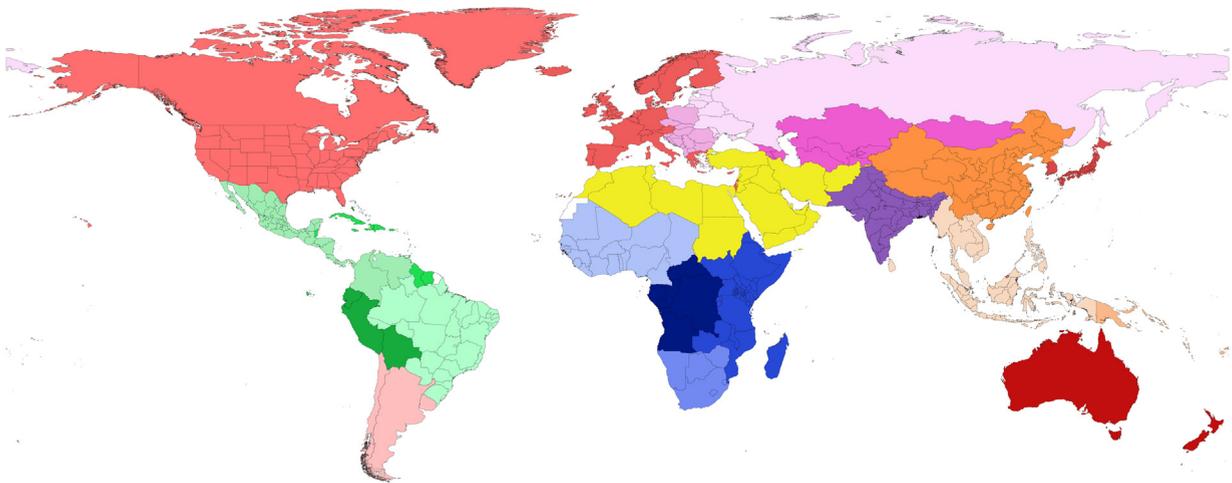
Beginning in 2020, through a collaborative effort involving *JACC*, the National Heart, Lung, and Blood Institute, and the Institute for Health Metrics and Evaluation (IHME) at the University of Washington, the global, regional, and U.S. burden of CVD and risk factors will be presented in *JACC* following each new cycle of GBD estimates. The first installment will focus on findings from the GBD 2019 Study and will be published in *JACC* in July 2020.

WHAT DATA WILL BE PRESENTED?

The 15 most common causes of CVD deaths (including congenital heart defects) and 13 related risk factors

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FIGURE 1 The 21 Global Burden of Disease Regions



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will form the core of data presented. Although often categorized separately from total cardiovascular disease, data from congenital heart disease will be presented alongside the global, regional, and national data (with the inclusion of the United States) for CVD to capture this important source of disease burden. In addition to total stroke, 3 stroke subtypes (ischemic stroke, intracerebral hemorrhage, and subarachnoid hemorrhage) will be presented. Similarly, 3 subcategories each will be presented for total non-rheumatic valvular heart disease (including calcific aortic and degenerative mitral) and total cardiomyopathy and myocarditis (including alcoholic cardiomyopathy and myocarditis). For the risk factors, subcategory data will be presented for high blood pressure, high low-density lipoprotein cholesterol, high fasting plasma glucose, high body mass index, air pollution (including ambient and household), tobacco use (including smoking and secondhand), impaired kidney function, lead exposure, alcohol use, and dietary targets of health policy.

For total CVD and each CVD cause of death, disease prevalence, mortality, years of life lost, years

lived with disability, and disability-adjusted life years (DALY) will be presented in tables for the 21 GBD regions of the world (Figure 1). CVD risk factor data will be presented as the attributable deaths and attributable DALYs by age group, sex, year, and location. Emphasis will be placed on high-quality, informative color figures and tables. Attention will be drawn to new trends and patterns that offer the opportunity for learning, practice and policy improvements, and global health research. Global, regional, and U.S. trends in health care access and quality (10) as well as the impact of CVD and risk factors in the attainment of health-related Sustainable Development Goals across the globe will be highlighted (11).

Most importantly, data will be presented on:

1. The absolute global and regional levels for the CVD cause (prevalent cases, number of deaths, number of years of life lost vs. number of years lived with disability, number of DALYs); the direction of global trends (increasing, unchanged, or decreasing); and the importance of the trend for global health.

2. What the difference between all-age rates and age-standardized rates tell us about the effect of age structure and population size on trends. Do population growth and aging explain the observed trend entirely, or is the disease itself changing?
3. The differences by sex and by age, and whether any important conclusions can be drawn from the differences.
4. Which regions or countries have the highest and lowest age-standardized DALY rates, and what might explain these patterns.
5. How should the information presented inform government policies, clinical practice, public health measures, or investments in scientific research?

pertinent to their implementation in low- and middle-income countries; and to draw conclusions about the necessary next steps to move forward. To recommend solutions, understanding the global landscape and prevalence of the varied cardiovascular and neurovascular disease states is integral. To develop appropriate regional patient prevention and management strategies across the globe, we first must understand the training and clinical needs of the specific community. We hope these statistics will foster enhanced capability to design improved training and clinical approaches globally, as well as launch additional research into the global patient population who suffer from cardiovascular disease and its complicating risk factors.

IMPLICATIONS FOR CLINICAL PRACTICE, TRAINING, AND RESEARCH

Active engagement of the cardiology community is important for furthering advances in clinical practice, training, and research in global health. Availability of up-to-date summary measures of cardiovascular health is invaluable in these endeavors. As noted in several reports from the Institute of Medicine (currently National Academies of Sciences, Engineering, and Medicine) on Promoting Cardiovascular Health and Preventing the Epidemic of Cardiovascular Diseases in Developing Countries (12-14), the National Academies of Sciences, Engineering, and Medicine committee sought to assess why there has not been more action to address CVD globally; to assess the available evidence on intervention approaches to prevent and manage CVD, including knowledge and strategies

CONCLUSIONS

We sincerely hope that this effort to present the CVD burden of disease estimates will serve to inform and support a global community of cardiovascular clinicians, researchers, health systems, governments, nongovernmental organizations, community-based organizations, and the public in the ongoing quest for improved cardiovascular health.

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