

The 10 'Best Buys' to combat heart disease, diabetes and stroke in Africa

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The Economist has branded Africa as 'the world's fastest growing continent'.¹ The economy in many African countries is growing at a rate that is higher than that of European countries. HIV infection is coming under control and life expectancy is increasing as a result of widespread use of antiretroviral therapy.² The rising economic prosperity and improving health status has been associated with what can be described as a renaissance in cardiovascular medicine that is characterised by the revival of pan-African professional organisations, such as the Pan African Society of Cardiology (PASCAR) and the creation of the *Cardiovascular Journal of Africa* as its mouthpiece.³ Over the past decade, a number of African-led multinational research networks have been established to combat hypertension,⁴ rheumatic heart disease,⁵ pericardial disease⁶ and heart failure.⁷ Indeed, Africans have ushered in a new golden era in public health research with a sustained increase in the quantity and quality of publications from the African continent.⁸

These economic and scientific changes have been accompanied by important shifts in the epidemiology of circulatory disorders in Africa. In the present series of articles on recent advances in heart disease, diabetes and stroke, the authors highlight a complicated transition in circulatory disease that is characterised by a 'double burden' of communicable and non-communicable disorders.⁹⁻¹⁶ Circulatory diseases have increased from about 4% of all admissions to African hospitals in the 1950s to 20% in the 2000s.¹⁷ An analysis of the causes of heart failure shows the relentless rise of hypertension as the leading causal factor, the relatively small but increasing contribution of coronary artery disease, and the persistence of rheumatic heart disease, endomyocardial fibrosis and cardiomyopathy as major contributors to the burden of heart disease on the continent.⁷ It is encouraging, however, to note that the rise in the burden of circulatory disorders has been associated with falling mortality from myocardial infarction and stroke in the Seychelles and South

Africa where national preventive programmes for non-communicable disease have been initiated.^{2 18}

While the relatively low rates of atherosclerotic diseases among Africans, and the early evidence of falling mortality from circulatory disorders are a cause for optimism, there are three factors that put the cardiovascular health of Africans at great risk. The first is the increasing urbanisation with the concomitant rise in the prevalence of hypertension and diabetes. It is estimated that the number of people with hypertension in Africa will increase by 68% from 75 million in 2008 to 126 million in 2025.¹⁹ About 7.5% (27.5 million) of people in the world, with diabetes, reside in Africa. It is expected that the largest relative increase in diabetes in the world will occur in Africa, resulting in 49.7 million people with diabetes by 2030—an 81% relative increase.²⁰ This projected tsunami of hypertension and diabetes will occur in a continent with the lowest number of health professionals per capita, and the most fragile of health systems in the world. The deficit of health professionals in sub-Saharan Africa amounts to approximately 2.4 million doctors and nurses. There are 2 doctors and 11 nursing/midwifery personnel per 10 000 population, compared with 19 doctors and 49 nursing/midwifery personnel per 10 000 in America, and 32 doctors and 78 nursing/midwifery personnel per 10 000 in Europe.²¹ Kiriga and colleagues have estimated that the current models for care of diabetes (and by inference other circulatory disorders) are unaffordable in sub-Saharan Africa.²²

The scale of the challenge posed by the 'triple jeopardy' of rising risk factors, weak health systems and lack of financial resources for conventional models of care for patients with circulatory disorders and diabetes demands an extraordinary response that Africa may well be able to provide. African governments have made an excellent start in this regard by adopting the Political Declaration at the United Nations General Assembly on 19 September 2011 which focused the global health community on the prevention and control of non-communicable diseases (NCDs). The four major NCDs (cardiovascular diseases, diabetes, cancer and

chronic respiratory diseases) and their four risk factors (tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol) constitute the target of the '4-by-4' approach. While targeting these eight NCDs and risk factors is also important in Africa, it will not be enough. A '5-by-5' strategy is needed, addressing neuropsychiatric disorders as the fifth NCD; and transmissible agents (such as *Streptococcus pyogenes*) that underlie the neglected tropical diseases (such as rheumatic heart disease) and other NCDs as the fifth risk factor.²³

There are 10 key population-level interventions of proven cost-effectiveness that are well suited to the low-income settings of African countries (box 1). Concerted action is needed to integrate the '10 Best Buys' for the prevention and treatment of heart disease, diabetes and stroke in the national plans for action on NCDs of African countries. The first priority for all African governments is to provide multi-drug regimens for people who are already affected with hypertension and related disorders. It is remarkable that while there is acceptance of the use of multidrug combinations for HIV/AIDS, many African ministries of health have been slow in adopting this proven approach for hypertension and other NCDs. Food legislation on salt and saturated fat, measures to increase physical activity and the strengthening of tobacco control are being implemented in a number of countries including the Seychelles and South Africa where positive results are already evident.^{2 18} The countries in the African region need to redouble their efforts in preventing rheumatic heart disease by implementing comprehensive primary and secondary prevention programmes on a large scale based on the Stop Rheumatic Heart Disease ASAP Programme of PASCAR.⁵ PASCAR has initiated an innovative model of training of cardiologists in Africa using a modular system of diplomas in key areas of cardiology, such as cardiac pacing, echocardiography and interventional cardiology which can be taken at different times and different institutions that offer the PASCAR curriculum. This initiative has stimulated the development of cardiology in resource-poor countries such as Sierra Leone. These innovations will ensure that the health system can derive maximum benefit from a limited number of multiskilled health professionals.

The last three 'Best Buys' for the development of cardiovascular care in Africa relate to strengthening of a district-based primary healthcare system in countries,

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Box 1 Recommendations of priority interventions to ministries of health for the prevention and control of heart disease, diabetes, and stroke in the African region: The 10 'Best Buys'

1. Provide multidrug regimens (eg, a fixed dose pill containing an angiotensin converting enzyme (ACE) inhibitor and diuretic for hypertension), and adopt an absolute risk approach to prevent stroke, chronic kidney disease, ischaemic heart disease and heart failure.
2. Food control legislation with public education for reducing the salt and saturated fat content of food.
3. Promotion of physical activity in schools, workplaces and the built environment.
4. Maintain and extend tobacco control activities especially for young people, and encourage quitting by means of counselling and nicotine replacement therapy.
5. Syndromic treatment of sore throat with penicillin in children to prevent rheumatic fever.
6. Establish register-based secondary prevention of rheumatic fever and rheumatic heart disease.
7. Needs-driven modular training of health professionals to meet the needs of the population.
8. Strengthen district-based primary health system, and integration of care of communicable and non-communicable diseases.
9. Creation of regional centres of excellence for specialist medical and surgical care.
10. Develop surveillance and quality assurance systems for heart disease, diabetes and stroke.

the development of regional hubs for specialised medical and surgical care, and the institution of robust surveillance and monitoring systems for burden of disease and quality of care. While the strengthening of primary care and development of surveillance systems is widely accepted, the proposal for the establishment of regional hubs for specialised care will require new thinking and willingness to collaborate among countries and their ministries of health. The African Union and regional economic blocks are well placed to ensure that greater regional cooperation on healthcare is achieved.

Leadership by the ministries of health is needed to ensure that the commitment of African governments to combat heart disease, diabetes and stroke is matched by tangible action. The role of physicians and other health professionals is to provide evidence on interventions that are immediately feasible and likely to have the greatest effect. Professional associations, such as the PASCAR, need to play their role as advocates for the adoption and implantation of the '10 Best Buys' of this *Heart* series at continental, national and local levels.

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