

Diabetes and HIV/AIDS in sub-Saharan Africa: the need for sustainable healthcare systems

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Chronic diseases, such as heart disease, stroke, cancer, chronic respiratory diseases and diabetes, are by far the leading cause of mortality worldwide, representing 60% of all deaths. Contrary to common perception, 80% of chronic disease deaths occur in low- and middle-income countries. This invisible epidemic is an underestimated cause of poverty and hinders the economic development of many countries. Sub-Saharan Africa carries the highest burden of disease in the world, the bulk of which still consists of the communicable diseases HIV/AIDS, tuberculosis and malaria. However, the prevalence and incidence of diabetes and its long-term complications in sub-Saharan Africa are increasing, and will have a devastating human and economic toll if the trends remain unabated in the future. This report describes the links between two chronic diseases, diabetes and HIV/AIDS, in sub-Saharan Africa and its implications for healthcare systems.

In 2006, a total of 24.7 million people in Africa were estimated to be infected with the human immunodeficiency virus (HIV) and 2.1 million were estimated to have died due to acquired immune deficiency syndrome (AIDS). By killing the economically active population in particular, HIV/AIDS is destroying the very fabric of societies throughout the continent.

In the industrialized world, the use of antiretroviral combination therapy (or highly active antiretroviral therapy, HAART) has dramatically improved the life expectancy and well-being

of people infected with HIV. Recently, the introduction of HAART in developing countries with a high prevalence of HIV has been recognized as a public health priority. This has resulted in a significant reduction in the price of antiretroviral drugs, increased donor funding, and enhanced political commitment – as demonstrated by, for instance, the World Health Organization (WHO)'s '3 by 5' initiative. The number of people with access to HAART in sub-Saharan Africa is estimated to have increased 10-fold over the last three years, currently covering approximately 28% of those in need (estimated at 1 340 000 of 4 800 000 people).

However, the rapidly increasing use of HAART in sub-Saharan Africa has some important implications. HIV disease requires life-long treatment, meticulous adherence to therapy, and intensive clinical and laboratory monitoring. Therefore, robust and sustainable healthcare systems are needed to provide adequately trained staff, laboratory facilities, and a reliable supply of drugs. Moreover, there are growing concerns about drug toxicity related to the chronic use of the antiretroviral drugs that are most frequently used in sub-Saharan Africa. It can be expected that the increasing use of these particular drugs in sub-Saharan Africa will contribute to the rising incidence and prevalence of diabetes, which has reached epidemic proportions in the industrialized world.

The increasing use of HAART in sub-Saharan Africa will contribute to the rising prevalence of diabetes.

Epidemiology of diabetes

The International Diabetes Federation estimates that currently more than 246 million people have diabetes worldwide. This figure is expected to reach 380 million by 2030. In 2005, an estimated 1.1 million people died from diabetes. Almost 80% of diabetes deaths occur in low- and middle-income countries. The exact genetic markers of diabetes are unknown and only limited studies have been performed in people of sub-Saharan African origin.

The effective management and prevention of diabetes in sub-Saharan Africa demand a multidisciplinary approach. There is a need for proper access to diabetes treatment and disease monitoring. Currently, laboratory monitoring, which is routinely performed to guide treatment in the industrialized world, is not routinely performed in sub-Saharan Africa. Besides individual characteristics, social obstacles, such as poor education and illiteracy, low socio-economic status, and lack of access to healthcare, make the prevention and treatment of diabetes in sub-Saharan Africa arduous.

Toxicity of HAART

For resource-limited countries, WHO has developed simplified treatment guidelines on the public health approach to the delivery of antiretroviral therapy.¹ This is based on a standard first-line therapy, consisting of two nucleoside/

nucleotide reverse transcriptase inhibitors (NRTIs) plus a non-nucleoside reverse transcriptase inhibitor (NNRTI); and second-line therapy, consisting of a boosted protease inhibitor (PI) with at least one NRTI – with the switch in therapy being guided by the clinical progression of the disease.

To date, by far the most common first-line therapy in sub-Saharan Africa consists of lamivudine (3TC), nevirapine (NVP), and either stavudine (d4T) or zidovudine (AZT). Often, d4T, 3TC and NVP are available in a fixed-dose combination – produced generically by pharmaceutical companies in India. WHO recommends the use of the fixed-dose combinations, not only because they simplify the drug regimen and improve adherence, but also because they are available at considerably lower prices than branded drugs.

However, the downside of this choice is that metabolic complications, including dyslipidaemia, insensitivity to insulin, and the excessive loss of fat beneath the skin (lipoatrophy) – resulting in sunken cheeks, indentations, and hollow eyes –, occur more frequently with the use of these therapies. In particular, d4T and to a lesser extent AZT are the cause of these complications.

Accelerating the emergence of diabetes

The toxicities associated with HIV therapy are directly influencing the emerging diabetes crisis in Africa. Both HIV PIs and thymidine analogue NRTIs contribute to dyslipidaemia and insensitivity to insulin, and thereby to cardiovascular risk. Interrupting HIV treatment may also contribute to a higher risk for cardiovascular disease, suggesting that HIV infection in itself may contribute to the formation of plaques in the lining of the arteries (atherogenesis).

Reductions in the cost of alternative and safer antiretrovirals are urgently needed.

The use of d4T increases the risk of new-onset diabetes² and has recently been shown to induce peripheral insensitivity to insulin in healthy people.³ Avoiding d4T as much as possible would thus contribute to avoiding these metabolic complications as well as lipoatrophy. Unfortunately, recent evidence suggests that AZT may also directly contribute to the onset of insensitivity to insulin and lipoatrophy. Thus, the continued



Poverty and the lack of access to healthcare complicate the prevention and treatment of chronic diseases.

reduction in the cost of alternative and safer antiretrovirals is urgently needed in resource-limited settings.

It should be emphasized that the toxicities associated with HIV therapy should never be used as an argument to withhold these life-saving treatments from anyone with HIV who needs them. But given the rise in diabetes and cardiovascular disease in low- and middle-income countries, and the toxicities of d4T – including its association with the development of diabetes – WHO notes that ‘it is important to begin planning to move away from d4T-containing regimens in particular so as to avoid or minimize the predictable toxicities associated with this drug.’¹

The need for an effective health chain

Both HIV/AIDS and diabetes are on the rise in sub-Saharan Africa – the latter notably amplified by the side effects of HAART. In addition to diabetes and HIV/AIDS, the incidence of other chronic diseases associated with ‘westernization’

and urbanization (obesity, respiratory diseases, coronary artery disease, high blood pressure) is also on the rise in sub-Saharan Africa. It remains to be seen exactly which effect HIV/AIDS and diabetes will have on each other’s epidemiology; but it is clear that for both diseases there is a need for chronic life-long treatment, and the availability of prompt diagnosis and laboratory monitoring. In addition, prevention measurements are crucial to avoid high costs of disease treatment and hospitalization at later stages.

However, in sub-Saharan Africa the healthcare infrastructure is underdeveloped, and suffers from a lack of adequately trained professionals, insufficient support for adherence to treatment, and interruptions in drug supply. It is a sad fact that while sub-Saharan Africa carries over 60% of the global burden of diseases, it spends less than 1% of total global health expenditure. In this regard, innovative healthcare delivery and financing models will be needed to ensure appropriate and sustained management of chronic diseases.

We propose that one way of accomplishing this is to make chronic diseases, including diabetes and HIV/AIDS, part and parcel of emerging healthcare insurance packages for Africans, as summarized below. A recommendation by WHO to African health insurers to include chronic diseases into their packages will contribute to this approach.

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Health insurance in Africa

Currently, a multitude of health insurance efforts are being undertaken in Africa. In our view, the establishment of insurances is the best way of dealing with chronic diseases. It should be kept in mind that insurances will require adequate healthcare infrastructure and human capacity to actually deliver treatment and care of chronic diseases. Only when the quality of care is considered consistent and sufficient by the individual, will the willingness to pay for insurance premiums increase.

Since in many African settings the state is not strong enough to enforce certain minimum standards of quality, these have to be secured through contractual arrangements and output-based programmes. The focus should be on strengthening healthcare financing and enhancing the capacity for accountable quality healthcare delivery at the same time.

The Health Insurance Fund: a practical example

The above considerations, among others, have contributed to the establishment of the Health Insurance Fund. This Fund is basically aiming at breaking the vicious circle of healthcare delivery by subsidizing the health insurance premiums of people living in Africa.⁴

A non-profit organization that is dedicated to quality healthcare, the Health Insurance Fund puts this innovative business model for healthcare development into practice. The objective of the Health Insurance Fund is to increase access to quality basic healthcare, including care for currently uninsured people in Africa with a low income, through the provision of group-based private health insurance. A start was made in Nigeria in February 2007.

With respect to diabetes, the recommendation would be that any insurance supported by the Health Insurance Fund should comply with an insurance package covering the following: performing diagnostic glucose tests (blood, urine), blood lipid control, blood pressure control and foot care, and screening for early signs of long-term complications. The insurance should reward favourable lifestyle behaviour – physical activity of 30 minutes or more per day, maintaining healthy body weight, smoking cessation.

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For more information on the Health Insurance Fund, visit www.pharmaccess.org

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