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THEME: “The Impact of Non-Communicable Diseases (NCDs) and Neglected Tropical Diseases (NTDs) on Development in Africa”.

Status Report on Hypertension in Africa
Foreword

Hypertension has been in the past regarded as a disease of affluence but this has changed drastically in the last two decades with average blood pressures now higher in Africa than in Europe and USA and the prevalence increasing among poor sections of society.

Hypertension is the number one risk factor for cardiovascular diseases (CVDs) such as myocardial infarctions, strokes and renal failures among others in Africa. Consequently, cardiovascular diseases (CVDs) have taken over as number one cause of death in Africa and the total numbers will further increase in the next decades reflecting on the growing urbanization and related lifestyle changes.

The new epidemic of hypertension and CVD is not only an important public health problem, but it will also have a big economic impact as a significant proportion of the productive population becomes chronically ill or die, leaving their families in poverty.

Hypertension is a silent killer that in general has no specific physical complaints, so it can only be detected by having one’s blood pressure measured on a regular basis. At this stage of the epidemic of hypertension and CVD the most important thing will be to raise awareness about the importance and urgency of knowing one’s blood pressure among the population, patients, doctors and policy makers.

Prevention through standardized guidelines for hypertension management in primary health care setting is much more effective in health and financial terms than treatment of complications in hospitals.

It is essential to develop and share best practices for affordable and effective community-based programs in screening and treatment of hypertension.

In order to prevent and control hypertension in the population, Africa needs policies developed and implemented through a multi-sectoral approach involving the Ministries of Health and other sectors including education, agriculture, transport, finance among others.

In order to address and monitor this epidemic appropriately more research on prevalence of hypertension and risk factors needs to be done in different settings in the region using a standardized approach like the WHO STEPS survey.

H.E. Dr. Mustapha S. Kaloko
AUC Commissioner for Social Affairs
1- Background

i. Global Perspective

1. Hypertension, otherwise known as high blood pressure, is a leading cause of cardiovascular diseases (CVDs) such as myocardial infarction and stroke worldwide. The proportion of the global burden of disease attributable to hypertension has significantly increased from about 4.5 percent (nearly 1 billion adults) in 2000, to 7 percent in 2010. This makes hypertension the single most important cause of morbidity and mortality globally and highlights the urgent need of action to address the problem.

ii. Hypertension in Africa

2. Traditionally in Africa, communicable diseases and maternal, perinatal and nutritional causes have accounted for the greatest burden of morbidity and mortality. This burden is fast shifting towards chronic non-communicable diseases, and by extension CVDs. This phenomenon is what is being termed as a “double burden of disease”. Whereas high blood pressure was almost non-existent in African societies in the first half of the twentieth century, estimates now show that in some settings in Africa more than 40 percent of adults have hypertension. The prevalence of hypertension has increased significantly over the past two to three decades. There were approximately 80 million adults with hypertension in Africa South of the Sahara in 2000 and projections based on current epidemiological data suggest that this figure will rise to 150 million by 2025. Further, there is evidence that indicates that related complications of hypertension, and in particular stroke and heart failure are also becoming increasingly more common in this region. These trends have been strongly linked with changes in individual and societal lifestyle such as an increase in tobacco use, excessive alcohol consumption, reduced physical activity and adoption of ‘Western’ diets that are high in salt, refined sugar and unhealthy fats and oils.

iii. Medical Consequences of Hypertension

3. Although hypertension usually has no symptoms, it leads to complications which are responsible for considerable morbidity and mortality. In general, hypertension can cause damage to the arteries, to the brain, to the heart and to the kidneys. Specifically, the main complications are:

a- Cardiac or heart-related: These include heart failure, coronary artery disease and myocardial infarction or heart attack;

b- Cerebrovascular or affecting the blood supply to the brain: These include cerebrovascular accident or stroke;

c- Renal or kidney-related: These include renal failure;

d- Retinal or affecting the retina in the eyes: These include retinopathy which may lead to visual impairment.
4. The reason for management of hypertension is primarily directed at preventing these complications rather than just the control of blood pressure itself.

2- Population and Epidemiologic Changes and the Hypertension Epidemic

5. Globally, there are trends in population structure, population movements, lifestyle changes and disease patterns that are thought to explain the increasing burden of non-communicable diseases including CVD and its precursor conditions like hypertension. These include: the epidemiological transition, urbanization, and population aging.

i. Epidemiological Transition

6. Health and disease patterns change over time in societies depending, among other factors, on the degree of changes in population structure and the rate of economic development, to result in the so-called epidemiological transition. As societies develop, although communicable diseases such as tuberculosis prevail, non-communicable diseases become more prevalent, particularly in urban populations. This is a result of changes in environmental and behavioral determinants such as increasing tobacco use, increasing fat and calorie consumption, and decreasing physical activity and longer periods of exposure to these determinants because of longer life expectancy. Whereas European and North American populations experienced similar changes in demography, determinants, and disease rates over the course of a century, African populations are passing through similar transitions in just a few decades.

7. As in other parts of the world, the prevalence of hypertension in Africa South of the Sahara has increased as a manifestation of the epidemiological transition. Hypertension has become a significant problem in many African countries experiencing the epidemiological transition from communicable to non-communicable diseases. Rural-to-urban migration coupled with acculturation and modernization high blood pressure as observed in Kenyan and Ghanaian epidemiologic studies.

ii. Urbanization in Africa

8. This increasing urbanization is one of the mean reasons for the rise of prevalence in hypertension in Africa. The levels of hypertension are structurally higher in urban than in rural settings mainly because of contextual and behavioral factors associated with urban environments such as dietary changes and sedentary lifestyle that together form a complex system conducive for developing hypertension. As the region becomes more urbanized, as per current trend in Africa, so will the prevalence of hypertension.

iii. Population Aging

9. The world’s population is in general increasingly becoming older. In less than twenty years there will be globally more people aged older than 60 than children under 10. It is important to realize that 73% of this older people will live in LMICs. Africa has also
remarkable projections in this field. Despite remaining younger than all other continents, Africa will see 13-fold growth in the size of its older population — from 56-million today to 716-million by the end of the century. This growth will outstrip that of any other world region or any other age group. This enormous shift of demographics will have a strong effect on public health in Africa. This increase of older people will lead to growing prevalence of chronic diseases like cardiovascular diseases. As aging is a risk factor for hypertension the prevalence of high blood pressure will be further pushed up in the coming decades because of this demographic shift.

3- Prevalence of Hypertension in Various Settings in Africa

10. Hypertension prevalence data are crucial for understanding the magnitude of the problem, identifying groups at high risk for CVD, and evaluating the effects of interventions in policy and practice. An increase in hypertension prevalence will invariably lead to dramatic rises in the incidence of CVDs and their consequences, which has the potential to overwhelm health care systems. It will also have financial implications for national and local treatment plans because there is increasing evidence that the majority of patients with hypertension will require two or more drugs to achieve blood pressure control.

11. The WHO STEPS survey conducted between 2003 and 2009 in 20 African countries reported high rates of hypertension in most countries, particularly among men. The prevalence ranges from 19.3% in Eritrea to 39.6% in Seychelles. The prevalence is for the adult population aged 18 years and above. For more country specific estimates see Figure 1. The prevalence is for the adult population aged 18 years and above. In Africa, hypertension is usually more pronounced in males than in females. However, in a few countries there were higher levels of prevalence in women than men such as in Algeria 31.6 percent vs. 25.7 percent in 2003, Botswana 37.0 percent vs. 28.8 percent in 2006 and Mali 25.8 percent vs. 16.6 percent in 2007, for women and men, respectively. Apart from sex differences in the prevalence of hypertension, there are also large differences based on residence. In all countries where data are available from the World Health Study (WHS), the urban population has a higher prevalence of hypertension than the rural population.

12. In South Africa and Democratic Republic Congo, the urban has almost 10 percentage points higher prevalence than the rural population. This is in comparison to countries like Ethiopia and Tanzania where the prevalence is only a bit more than 5 percent higher. It is noteworthy that since countries are at different stages of the epidemiological transitions, there are some rural populations in some countries whose prevalence is higher than some urban populations in other countries. For instance, rural populations in Ghana, South Africa, and DRC have a higher prevalence than the urban populations in Ethiopia and Tanzania.
Figure 1 - Prevalence of Hypertension in Selected African Countries that Participated in the WHO-STEPS Surveys (2003 to 2009)

13. It is well known that urban averages mask great intra-urban disparities largely due to the presence of large populations in poor slum settlements that characterize most urban centers in Africa. Data from Nairobi collected from the adult population in two slum settlements show a high prevalence of hypertension (overall of 19%) with large sex and age-specific differences. The data also dispel the notion that hypertension is a disease of affluence since the majority of residents surveyed are poor.
4- Risk Factors for Hypertension in Africa

14. Hypertension is mainly associated with environmental and lifestyle factors rather than with genetics and has a stronger association and causal link with five particular behaviors: tobacco use, excessive use of alcohol, physical inactivity, unhealthy diet (high salt intake and, insufficient fruit and vegetable consumption) and obesity. Risk factors leading to hypertension can be reversible (modifiable), irreversible (non-modifiable), or associated with other predisposing disorders (List 1).

List 1: Risk factors for hypertension

<table>
<thead>
<tr>
<th>Non-modifiable factors</th>
<th>Modifiable factors (environmental or lifestyle)</th>
</tr>
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<tbody>
<tr>
<td>- Age</td>
<td>- High Sodium consumption (in salt sensitivity cases)</td>
</tr>
<tr>
<td>- Gender (male sex)</td>
<td>- Smoking</td>
</tr>
<tr>
<td>- Family history of cardiovascular events and genetic predisposition</td>
<td>- Excess alcohol</td>
</tr>
<tr>
<td><strong>Other factors</strong></td>
<td>- Overweight and obesity</td>
</tr>
<tr>
<td>- Dyslipidemia (altered blood lipid profile)</td>
<td>- Inadequate physical activity</td>
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<tr>
<td>- Increased triglycerides</td>
<td>- Low Potassium intake</td>
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<tr>
<td>- Hyperuricaemia (high levels of uric acid)</td>
<td>- Unhealthy diet, particularly excess calories, fats, and fructose</td>
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<tr>
<td>- Increased arterial stiffness</td>
<td>- Sedentary lifestyle</td>
</tr>
<tr>
<td>- Systemic pro-inflammatory state</td>
<td>- Psychological stress</td>
</tr>
<tr>
<td>- Under nutrition in childhood</td>
<td>- Urban living</td>
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<tr>
<td>- Sleep deprivation</td>
<td>- Vitamin D deficiency</td>
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<tr>
<td>- Prescription drugs (e.g. non-steroidal anti-inflammatory drugs)</td>
<td>- Low Folic-acid intake</td>
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<td>- Long-term exposure to noise</td>
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5- Modifiable Risk Factors for Hypertension

i. **Tobacco Use**

15. Tobacco smoking is known to increase the risk of developing hypertension and cardiovascular diseases like stroke, thrombosis and heart attack. Smoking causes an immediate increase in blood pressure resulting in higher ambulatory blood pressure
levels for smokers than for non-smokers. Smoking cessation is known to reduce the overall risk of cardiovascular diseases. In order to reduce smoking at the population level, it is important to implement multi-sectoral interventions like increasing taxes on tobacco products, banning of tobacco advertisements and banning smoking in public spaces.

ii. Alcohol Consumption

16. Alcohol consumption is relatively frequent in Africa. There is a direct effect between high levels and specific patterns of alcohol consumption (such as binge drinking) and rising risk of hypertension. The influence of heavy drinking, on increasing blood pressure levels has been described in Nigeria. Interventions to limit alcohol use should be introduced in a multi-sectoral manner and adapted to the local situation. Such interventions, like in reducing tobacco use, include increasing taxes on alcohol, and banning alcohol advertising especially to young people.

iii. Inadequate Physical Activity

17. Adequate physical activity has been shown to have many health-promoting effects and has a direct, independent role in reducing hypertension. Traditionally, it has been thought that a high level of physical activity could in part explain the low levels of chronic diseases found in most of Africa. However, the amounts of physical activity have been decreasing as a result of the high rate of urbanization that has been occurring across the continent. Few studies on the physical activity patterns of African populations have been published.

iv. High Salt Intake

18. A high intake of sodium is common, in Africa mostly from salt used to preserve food or to make it tastier. Also, salt is added to already-prepared food by the consumer, as processed food is rare. Decreased salt intake not only reduces blood pressure and related CVD risk, but has other beneficial cardiovascular effects that are independent of and additive to its effect on blood pressure. It has been reported to have a direct effect on reducing stroke, left ventricular hypertrophy, aortic stiffness, and chronic kidney disease and proteinuria. For that reason, it is reasonable to infer that the total impact of reducing salt intake on cardiovascular outcomes could be greater than those expected from blood pressure reduction only.

v. Insufficient Fruit and Vegetable Consumption

19. Fruit and vegetable consumption is one element of a healthy diet and varies considerably among countries, reflecting economic, cultural and agricultural production environments. Most of the benefits of fruits and vegetables come from reduction in CVD and risk factors, particularly hypertension. In addition to a high salt intake, many people in Africa often eat insufficient fruits and vegetables, resulting in low potassium intake.
This in turn is associated with higher blood pressure in some patients; a potassium intake of 90 mmol/day is recommended.

vi. **Obesity**

20. The World Health Organization (WHO) defines obesity as a condition in which excess body fat has accumulated to such an extent that health may be adversely affected. The degree of body weight is usually expressed as BMI; this is the ratio of weight in kilograms to the square of height in meters. The BMI is used to classify a person’s body weight as underweight (BMI less than 18.5), normal weight (BMI 18.5–24.9), overweight (BMI 25–29.9), or obese (BMI greater than 30). Obesity greatly increases the risk for hypertension and has also been shown to be associated with coronary artery disease and some cancers, and to reduce life expectancy. As obesity is rapidly rising in different countries, it will be important to share best practices to reduce this trend.

6- **Economic Cost of Hypertension in Africa**

21. The economic burden of CVD in Africa is significant. CVDs will cost the continent billions of dollars in the next decade. Hypertension remains the number one cause of significant financial burden, including the cost of caring for all the complications arising from it like stroke, ischemic heart disease and congestive heart failure. The financial burden comes in the form of direct healthcare costs related to treatment of CVD and its risk factors. These costs are borne by the individuals, governments, and the private sector.

22. Furthermore, there are numerous indirect costs related to hypertension, data for which are, fragmented for most African countries. These costs include the lost productivity of workers struck by stroke, heart failure, and ischemic heart disease. Other costs include the lost savings and assets that are foregone when families must meet catastrophic healthcare expenditures such as those associated with rehabilitation following stroke or dialysis following renal failure. Added to that are the major economic and social (opportunity) costs to families who - in the near absence of formal care systems - need to provide often intensive long term care to older relatives. In spite of the current relatively low prevalence of hypertension in some countries, the total number of people with hypertension in LMICs is high and a cost analysis of possible anti-hypertensive drug treatment indicates that LMICs cannot afford the same treatment as in high income countries. This is because African countries have limited resources to devote to hypertension in light of other competing health priorities.

23. The average amount of healthcare expenditure as a percentage of gross domestic product (GDP) for African countries is 6.3 percent. There is however a wide range of this metric ranging from 2.5 percent in the Democratic Republic of Congo to 12.9 percent of GDP in Malawi. There is also a wide range of health care expenditure per capita across African countries from as little as $6 per capita in Ethiopia to as much as $390 per capita in South Africa. Nonetheless, the amounts are still quite small
compared with $3727 per capita for high-income countries. Effective management of hypertension usually requires treatments with more than one drug. A study in Ghana, found that only 18 percent of a group of patients with hypertension had one drug prescribed, whereas 60 percent had two drugs and 22 percent had three or more drugs prescribed. The use of two or more drugs will inevitably result in a high cost for anti-hypertensive medication, especially when newer medicines are used. However, there are cheaper, older, and effective medications available in most African countries. “Number needed to treat” analyses showed that the cost of drugs to prevent one death is US$ 14,000 to US$ 1 million in the United States, depending on which drug used. Obviously many African countries cannot afford such high costs of treatment for one condition with many other competing health priorities and a limited resource envelop.

7- Issues and Challenges

24. Africa faces an unprecedented epidemic of CVDs. Hypertension is the key driver of cardiovascular complications. Whereas high blood pressure almost did not exist in native African populations in the first half of the twentieth century, hypertension now affects between 30 percent and 50 percent of these populations. Lowering blood pressure and controlling hypertension is key to CVD prevention. Many countries in Africa are undergoing a rapid demographic and epidemiologic transition.

25. While much attention in the region has been focused on communicable diseases such as malaria, tuberculosis, and HIV/AIDS, changes in demographic and determinants of health, particularly changes in lifestyle associated with urbanization, have resulted in an epidemiological and nutrition transition towards a greater prevalence of non-communicable diseases. The dual burden of persistent infectious diseases and emerging chronic diseases such as hypertension, poses a serious threat to population health in the region.

26. Prevalence and incidence of both hypertension and pre-hypertension are high. Efforts to prevent or attenuate high blood pressure could lead to a substantial reduction of complications. Lifestyle modifications play a crucial role in preventing elevation of and better control of high blood pressure. Weight loss, control of sodium intake and diet, and promoting physical activity are essential steps towards this direction. However, when medications are needed to reduce blood pressure levels, the selection of the appropriate drugs is important not only for effective control but also to reduce hypertension related complications.

27. Awareness, treatment, and control of hypertension in Africa are lagging behind many world regions. Significant numbers of individuals with hypertension in Africa are unaware of their condition and, among those with diagnosed hypertension, treatment is frequently inadequate. Detection, prevention, and treatment of hypertension should now be regarded as a high priority in Africa. Establishing factors associated with awareness and management is an essential starting point in preventing an increase in the burden of hypertension-related CVD. While it is true that enormous challenges exist in the control of communicable diseases in Africa, non-communicable diseases such as
hypertension are also important threats to the health of the adult population in many countries. Controversy exists, however, over the priority these conditions deserve in the competition for scarce resources. Unfortunately, these discussions take place in an information vacuum, since it is impossible to define the burden of chronic conditions in societies where health statistics are unavailable. The scarce resources available must benefit the whole population. Research into non-communicable diseases, particularly cardiovascular disease in Africa should be seen as vital especially where it can inform resource-allocation decisions.

28. The problem of defining a strategy for hypertension control confronts most societies. Hypertension is fully treatable, but social and economic conditions in many African countries make the implementation of blood pressure control programs difficult. Lack of a clear strategy based on evidence has undermined these efforts further. Inadequate funds, inexperience, and lack of infrastructure remain important barriers to hypertension detection and treatment. Accordingly, the overall management of hypertension is as much a socioeconomic as it is a therapeutic problem. Screening ideally not only detects hypertension but also forms the basis for education and therapy.

29. Collating information on risk factors for cardiovascular diseases in Africa is an enormous task that is achievable only through collaboration. An active approach to hypertension must be driven by the ministries of health as well as by local organizations, with support from influential bodies such as the International Forum for Hypertension Control and Prevention in Africa. The current enthusiasm for collaboration is crucial for the development and implementation of health-care policies throughout the region. This collaboration is especially important when attempting to validate any developed guidelines for treatment or prevention of non-communicable diseases in Africa. The epidemiology of hypertension morbidity will at least provide the starting point for better health-care planning, which could mirror the way communicable diseases have been handled.

8- The Way Forward

   i. Development of national plans of action

30. An analysis in the different countries should be made of which stakeholders are involved in CVD prevention and control, which activities are currently ongoing. These stakeholders should be given the forum and opportunity to come up with a national plan of action following the WHO recommendations.

   ii. Reduce risk factors through policies

31. Public health policies should be focused on reducing risk factors for hypertension and CVD in general like tobacco use, excessive alcohol intake, physical inactivity, and unhealthy diets. This can be done by fully implementing already existing policies like the Tobacco Control Act and crafting new policies to address the other risk factors.
iii. Surveillance and monitoring

32. National and regional bodies should take the lead in strengthening hypertension surveillance and monitoring efforts. Data are critical for determining the burden of hypertension, characterizing the patterns among sub groups of the population, assessing changes in the problem over time, and evaluating the success of interventions. Effective monitoring and surveillance systems need to be in place, to track progress in reducing the prevalence of hypertension, and increasing awareness, treatment and control of hypertension.

iv. Improve health systems structure

33. Besides implementing policies that are covering the society in general there should also be a strong focus on development and improvement of health service delivery system to address the management of chronic NCD. This can be done through community based screening programs and strengthening Primary Health Care settings to manage simple cases as well as establishing strong referral links to ensure continuity of care among diagnosed patients.

v. Improve quality of care

34. It is essential that quality of care for hypertension patients improves as part of efforts to strengthen the health service delivery system for the management of chronic NCDs. This can be done through rigorous training of health care staff like nurses, community health workers and clinical officers. In order to ensure consistent quality of care, national standard guidelines for treatment and management of hypertension should be developed and implemented.

vi. Increase allocation of financial resources to control of Hypertension

35. African countries need to invest more financial resources in effective interventions against hypertension. Part of these resources could be obtained from the increased taxes on tobacco and alcohol.
List of Acronyms

BMI – Body Mass Index
BP – Blood Pressure
CVD – Cardiovascular Disease
LMIC – Low and Middle Income Countries
LSM – Lifestyle Modification
NCD – Non-communicable Disease
WHA – World Health Assembly
WHO – World Health Organization
WHS – World Health Survey

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