Hypertension

REVIEW

How to Improve Awareness, Treatment, and Control of Hypertension in Africa, and How to Reduce Its Consequences: A Call to Action From the World Hypertension League

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ABSTRACT: Hypertension is the leading preventable risk factor for cardiovascular diseases and disability globally. In low- and middle-income countries hypertension has a major social impact, increasing the disease burden and costs for national health systems. The present call to action aims to stimulate all African countries to adopt several solutions to achieve better hypertension management. The following 3 goals should be achieved in Africa by 2030: (1) 80% of adults with high blood pressure in Africa are diagnosed; (2) 80% of diagnosed hypertensives, that is, 64% of all hypertensives, are treated; and (3) 80% of treated hypertensive patients are controlled. To achieve these aims, we call on individuals and organizations from government, private sector, health care, and civil society in Africa and indeed on all Africans to undertake a few specific high priority actions. The aim is to improve the detection, diagnosis, management, and control of hypertension, now considered to be the leading preventable killer in Africa.

Key Words: Africa ■ blood pressure ■ cardiovascular diseases ■ heart disease risk factors ■ hypertension ■ obesity

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THE NEED OF THIS CALL TO ACTION

Arterial hypertension, defined as an average accurately and repeatedly measured office systolic blood pressure (BP) ≥140 mm Hg and diastolic BP ≥90 mm Hg, or presence of treatment with antihypertensive medications, is the leading preventable risk factor for cardiovascular diseases (CVD) in the world, including low- and middle-income countries (LMICs).[1,2] Moreover, arterial hypertension is one of the main causes of disability around the globe, which dramatically adds to the importance of its control worldwide.

In recent years, a significant increase in BP levels has been observed in LMICs, where only 1 in 3 are aware of their hypertensive condition, and only roughly 8% have their BP controlled. The growth of this health burden has a major impact not only on mortality rates, but also on relevant social issues, contributing to widen the health equity gap, and importantly increases the cost of health care for national health systems.[2]

For many years, World Hypertension League has been active to promote better hypertension management in LMICs and has gathered considerable experience in this field, as documented in a previous call to action for hypertension control including observations derived from Latin American countries.[3] In Africa, nearly half of those aged 25 years and above are hypertensive (>150 million adults), and an estimated 50 million adults have very substantively increased BP (>160/100 mm Hg).[1,4,5] Obesity at least doubles the risk of hypertension among Africans.[6]

Hypertension prevalence significantly varies in different African countries, ranging from 37% to 75%. Akpa et al[6] have provided a general overview of the

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Nonstandard Abbreviations and Acronyms

BP	blood pressure
CVD	cardiovascular disease
LMIC	low- and middle-income countries
MOCCA	Management of Chronic Conditions in Africa
NCD	noncommunicable disease
PLWH	people living with HIV
SSA	Sub-Saharan Africa

prevalence of hypertension across Africa. These authors have clearly shown that, according to an age-adjusted analysis, hypertension is significantly more prevalent in men than in women, with some regional variation. Africa now appears to have the highest prevalence of hypertension in the world, amounting to roughly 46% for both sexes combined in individuals over 25 yrs of age, with important regional differences. These differences in hypertension prevalence across regions may depend on different factors, such as methodological limitations of individual studies in terms of power and coverage, or real differences in hypertension mechanisms among different regions and between rural and urban settings. The latter include differences in age-adjusted prevalence of obesity as well as difference in socioeconomic, lifestyle, nutritional, and environmental risk factors, as well as in genetic factors. Indeed, while population-based crude prevalence of hypertension was highest in southern Africa, age-adjusted hypertension prevalence was highest in Western Africa, and among older people across all regions with additional geographic differences across different African countries. On such a complex background, Akpa et al[6] have also estimated the prevalence of hypertension in Africa by separately considering the 140/90 mm Hg cutoff proposed by the European Society of Cardiology/European Society of Hypertension 2018 and the ISH 2020 hypertension guidelines,[7,8] and the 130/80 mm Hg cutoff proposed by the 2017 American Heart Association/American College of Cardiology guidelines.[9] In 21 512 individuals from different African countries, hypertension prevalence in males was 42.2% (41.3–43.1) and 58.2% (57.3–59.0), respectively, for the 140/90 and 130/80 mm Hg cutoffs, while the corresponding figures were 41.8% (40.8–42.8) and 60.8% (59.8–61.8) in females. Thus, the study by Akpa et al[6] clearly shows, by considering data from 13 African countries, that the burden of hypertension in Africa is substantially higher using the 2017 American Heart Association/American College of Cardiology BP cutoff as compared with the hypertension definition proposed by European Society of Cardiology/European Society of Hypertension and ISH guidelines. Moreover, this study confirms that hypertension prevalence in Africa is characterized by important regional differences, is strongly associated with obesity and is significantly affected by sex-dependent differences, the prevalence of hypertension being significantly higher in women than in men in eastern Africa, Northern Africa, and Southern Africa (Table).

A systematic review and meta-analysis of 33 surveys involving 110 414 participants in Sub-Saharan Africa (SSA) with a mean age of 40 years[3] showed that in 2015 average hypertension prevalence was 30% (95% CI, 27%–34%), varying widely across the studies and at different ages (range 15%–70%). Of those with hypertension, only 27% (95% CI, 23%–31%) were aware of their hypertensive status. Overall, about two-thirds of those diagnosed with hypertension were treated, accounting for 18% (95% CI, 14%–22%) of all hypertensive patients. Effective BP control was obtained only by 7% (95% CI, 5%–8%) of all individuals with hypertension (Figure 1A). SSA is among the regions of the world with lowest rates of hypertension detection, treatment, and control, and several countries in this region have seen little improvement in these outcomes over the past 30 years[10] A recent study by Turè et al[11] reports a 26.9% prevalence of hypertension (systolic BP ≥140 mm Hg, diastolic BP ≥90 mm Hg, or use of antihypertensive medication within the previous 2 weeks) in adults living in Guinea-Bissau. In those with hypertension, 51.4% reported they were already aware of their diagnosis and 51.8% of those who were aware reported use of antihypertensive drug therapy within the previous 2 weeks. In those who were being treated with antihypertensive medication, 49.9% had a BP below 140/90 mm Hg, yielding a 7.6% rate of systolic/diastolic BP control to <140/90 mm Hg.

The need to change this situation is related to the high risk for disabling and life-threatening CVDs (such as stroke) associated with hypertension also in Africa. In 2019, in North Africa, high BP was the leading risk factor for death accounting for over a quarter (25.9%) of all deaths while it is the fourth leading risk factor accounting for >1 in 12 (8.8%) of deaths in Sub Saharan Africa. There were over 1 million cardiovascular deaths in Sub Saharan Africa in 2019. These findings emphasize the need for urgent implementation of appropriate strategies for hypertension diagnosis, control, and prevention.

NEED OF INTEGRATING CHRONIC CONDITIONS (DIABETES, HYPERTENSION, AND HIV) CARE IN SSA

As mentioned above, in recent years there has been a sharp rise in the prevalence of diabetes and hypertension in Africa, where these 2 conditions account for around 2 million premature adult deaths annually.[12–17] In spite of the availability of effective treatments for diabetes and hypertension, only 10% to 20% of persons

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Table. Crude and Age-Adjusted Proportion of Hypertension Stratified by Hypertension Definitions Per Sex, Age Group, Country Geographic Region, BMI, and Obesity in the CHAIR Study PC

Factor	Hypertension defined as ≥140/90 mm Hg n=21 512 Proportion (95% CI)	Hypertension defined as ≥130/80 mm Hg n=21 512 Proportion (95% CI)	*P* value
Sex			
Male	42.2 (41.3–43.1)	58.2 (57.3–59.0)	<0.001
Female	41.8 (40.8–42.8)	60.8 (59.8–61.8)	<0.001
Age, mean±SD	53.0±11.2	51.1±11.7	
<40 y	22.0 (20.7–23.4)	42.9 (41.4–44.6)	<0.001
40–44	29.5 (28.0–31.1)	49.1 (47.4–50.8)	<0.001
45–49	36.2 (34.6–37.8)	54.6 (52.9–56.2)	<0.001
50–54	44.6 (43.1–46.2)	62.5 (60.9–64.0)	<0.001
55–59	51.7 (50.1–53.4)	67.3 (65.7–68.8)	<0.001
60–64	65.9 (63.6–68.2)	76.9 (74.8–78.9)	<0.001
≥65	75.4 (73.3–77.3)	86.3 (84.6–87.8)	<0.001
Country			
Burkina Faso	16.4 (14.9–18.1)	30.7 (28.8–32.8)	<0.001
Cameroon	…	…	…
Ghana	45.9 (44.6–47.3)	60.7 (59.4–62.0)	<0.001
Guinea	…	…	…
Kenya	24.7 (22.9–26.5)	46.8 (44.8–48.8)	<0.001
Mozambique	34.1 (27.5–41.4)	53.9 (46.6–61.1)	<0.001
Namibia	25.0 (20.6–29.9)	45.5 (40.2–50.9)	<0.001
Nigeria	51.7 (50.3–53.1)	67.0 (65.7–68.4)	<0.001
South Africa	50.3 (48.9–51.6)	69.4 (68.2–70.6)	<0.001
Sudan	11.9 (7.8–17.9)	39.5 (32.4–47.1)	<0.001
Tanzania	…	…	…
Uganda	14.6 (10.4–19.9)	44.1 (37.6–50.9)	<0.001
Zambia	19.1 (14.4–24.8)	45.5 (39.0–52.0)	<0.001
Region			
East Africa	23.8 (22.2–25.5)	46.6 (44.6–48.5)	<0.001
Central Africa	…	…	…
North Africa	11.9 (7.82–17.9)	39.5 (32.4–47.1)	<0.001
Southern Africa	47.5 (46.3–48.7)	66.9 (65.8–68.1)	<0.001
Western Africa	43.3 (42.4–44.1)	58.2 (57.3–59.0)	<0.001
BMI, kg/m^2, mean±SD	28.0±17.2	27.4±16.5	
Underweight (<18.5)	23.2 (21.3–25.1)	38.1 (35.9–40.3)	<0.001
Normal weight (18.5–24.9)	32.6 (31.6–33.5)	50.4 (49.4–51.4)	<0.001
Over weight (25.0–29.9)	50.1 (48.8–51.5)	68.5 (67.2–69.8)	<0.001
Obese (≥30)	60.0 (58.6–61.5)	76.6 (75.3–77.8)	<0.001
Overall crude proportion	42.0 (41.4–42.7)	59.3 (58.7–59.9)	<0.001
Age-adjusted proportion of hypertension	32.0 (30.9–33.0)	51.1 (49.6–52.5)	…

Prevalence was estimated as a function of the frequency of hypertension and the category total. BMI indicates body mass index; CHAIR, Cardiovascular H3Africa Innovation Resource; and PC, population controls. Adapted from Akpa et al[6] with permission. Copyright ©2020, Wolters Kluwer Health, Inc.

living with these conditions are under regular care,[12,18,19] which is mainly due to lack of effective health care services.[20–22] This emphasizes the need of approaches aimed at increasing access to health services for the management of diabetes and hypertension in Africa. Resolving this issue represents a major public health challenge in Africa, where health care is mainly organized to deal with acute infections, with limited experience in management of chronic diseases,[23] except for HIV infection which requires long-term management. In

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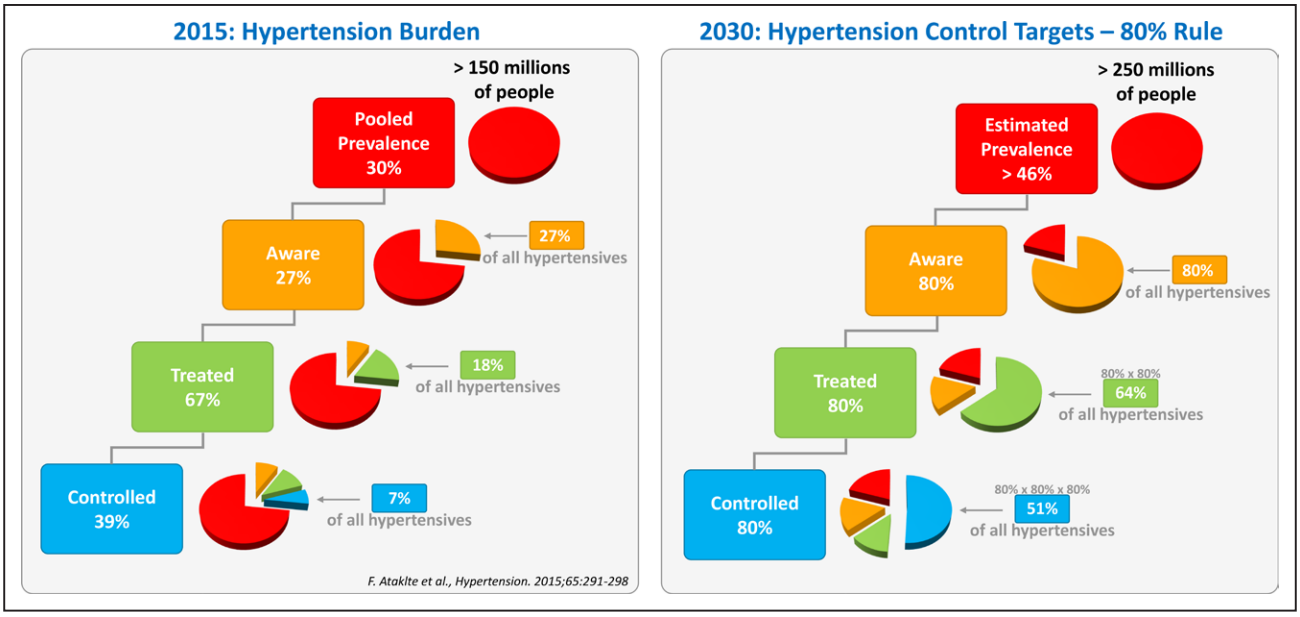

Figure 1. Hypertension Burden in Africa in year 2015 and target changes proposed for year 2030.

Eastern and Southern Africa 83% of people affected by HIV infection are in regular care, with 90% of these virally suppressed.[24–26] In fact, HIV-associated mortality has been markedly reduced from >2 million to less than half a million per year.[24] Similar levels of retention and control should thus be achieved also for hypertension and diabetes, to obtain a significant reduction in mortality needed to meet the Sustainable Development Goals.[27] One possible explanation for the success in fighting HIV is related to the early organization of HIV services in stand-alone clinics in most African countries as soon as effective antiretroviral drugs were made available. African health systems should consider re-organizing their services to manage hypertension and diabetes in a similar way. Managing multiple chronic conditions in the same clinics could optimize use of health care resources, allowing the application of what was learnt in HIV treatment programs to control hypertension and diabetes. There is some theoretical concern that integrating care of HIV with that of other chronic diseases might deter patients with diabetes and hypertension from seeking care due to fear of contact with patients affected by HIV infection or perceived to have HIV.[28,29] In Tanzania and Uganda, Birungi et al[30] conducted a cohort study (MOCCA [Management of Chronic Conditions in Africa]) to evaluate a program based on integrated care for HIV infection, diabetes, and hypertension in terms of feasibility, acceptability, retention, treatment and control of high BP and diabetes. Integrating care for HIV infection, diabetes and hypertension achieved high levels of retention for people living with diabetes or hypertension in Africa. This improvement was not at the expense of HIV control, as retention in all 3 groups of people with single conditions was similar, and the proportion of patients with an HIV viral suppression was close to 90%. Thus, the study suggests that an integrated approach could achieve excellent retention for diabetes and hypertension.[31–33] Achievement of high retention rates improved BP and glycemia control. However, it still was associated with a high percentage of patients continuing to have uncontrolled BP and glycemia, in contrast to the situation with HIV for which most patients continued to have excellent control of viraemia. This further emphasizes the importance of the present call to action, aimed at identifying and promoting interventions which might improve BP and diabetes control to effectively reduce mortality from noncommunicable diseases.

The importance of exploring the possible integration of HIV and hypertension management is related to the evidence that SSA is affected by the highest burden of infectious diseases worldwide, including 70% of global HIV burden.[34] Antiretroviral therapy has led to the reduction in new HIV infections, a decrease in deaths due to HIV/AIDS, and dramatic improvement in the survival and quality of life among people living with HIV (PLWH).[35] The importance of providing integrated care covering both HIV and noncommunicable diseases (NCDs), such as hypertension is emphasized as PLWH are at increased risk of NCDs, in particular CVD[35,36] and both HIV infection and antiretroviral therapy are involved in determining the increased prevalence of CVD among PLWH.[37]

Indeed, several SSA countries are facing an epidemiological transition, in which NCDs are contributing more than infectious diseases to the overall burden of disease.[38] CVDs are of particular concern because of the large number of people with HIV. Lubega et al[39] studied the prevalence of hypertension, and the association of antiretroviral therapy and hypertension among PLWH on treatment in Uganda and showed a highly frequent association of HIV with hypertension among PLWH. This

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association was at least in part related to modifiable risk factors such as body mass index and Nevirapine based regimen, the reduction of which resulted in a reduction of hypertension prevalence among PLWH, which further emphasizes the need for improving hypertension management in these patients.

WHAT SHOULD BE DONE

Given that currently there are limited effective strategies and resources to screen and control hypertension in Africa and other LMICs, a major paradigm shift is required to reduce the burden of hypertension-related death and disability at a population level. The way to this paradigm shift was clearly outlined by the 2017 Pan African Society of Cardiology roadmap to reduce the burden of hypertension in Africa[40] but received very little political attention so far.

Several acknowledged risk factors would need to be adequately managed also in Africa to face this situation, including unhealthy diet (with high salt and low fruit and vegetable intake), physical inactivity, tobacco and alcohol use, and obesity.[2,6] To this aim, African countries should consider reframing their response in line with the recommendations of the Lancet Diabetes and Endocrinology Commission on Diabetes in SSA, by adopting an integrated person-centered approach as part of what must be done.[41] Among the interventions to be implemented to reduce the burden of hypertension in African countries, a great emphasis must be given to salt reduction policies. Indeed, roughly 30% of hypertension prevalence can be associated to high dietary sodium worldwide.[42,43] The INTERSALT study and several experimental studies in animals suggest that high dietary sodium consumption might have a much larger impact on BP all over a life course than is identified in the currently available relatively short-term sodium reduction trials and suggest that, at least in part, its effect on increased BP might be irreversible.[44,45] In addition, patients of black ancestry may have greater increases in BP when excess salt is consumed.[46] This emphasizes the need of effective and early intervention in young people before permanent harm occurs. Meta-analyses of randomized controlled trials demonstrate that reducing dietary sodium intake decreases BP in both those with and without hypertension, at all ages and in all ethnic groups,[47–51] which calls for strong interventions in this direction by health care systems in Africa. In such a context, in addition to reducing the addition of sodium during food processing and preparation, use of salt substitutes has been demonstrated to provide a safe and effective approach to prevention of CVD.[52]

Another important problem to face in relation to uncontrolled hypertension is the high mortality in childbearing women due to preeclampsia. Maternal mortality is high in LMIC.[53,54] SSA is the most affected region, with 66% of maternal deaths, with hypertensive disorders during pregnancy being identified as the second leading cause, after hemorrhage, of maternal and perinatal death, accounting for 14% and 27.1%, respectively.[55] According to the World Health Organization (WHO), 16% of maternal deaths in SSA are attributable to hypertensive disorders during pregnancy, with preeclampsia and eclampsia being the leading causes.[56] The incidence of preeclampsia ranges from 3% to 5%[57] and can reach 10%,[58] being higher in LMIC. Preeclampsia increases maternal and perinatal mortality through both fetal and maternal complications. Several risk factors have been reported to play a role in preeclampsia prevalence, including advanced age, multiple pregnancies, nulliparity, personal history of preeclampsia and prepregnancy medical conditions such as chronic high BP, type 2 diabetes, and renal failure.[59,60] Cardiovascular risk factors have been reported to be involved in the onset of preeclampsia.[61–64] This may represent a problem in Africa, in particular in SSA, where women have been reported to be characterized by a high prevalence of cardiovascular risk factors. According to a review of available studies,[60–64] the most prevalent ones are hypertension (29%), diabetes (7%), overweight (35%), obesity (11%), alcohol consumption (13%), tobacco (2%). In particular, chronic hypertension can increase the risk of developing preeclampsia during pregnancy by 3- to 10-fold. Thus, given the evidence that cardiovascular risk factors, and in particular chronic hypertension, may predispose to occurrence of preeclampsia, screening of women at risk could help reducing mortality related to hypertensive complications of pregnancy, in particular preeclampsia. This is another important reason for the present call to action for a better hypertension control in this continent.

On top of these well-known problems, there are also emerging risk factors in Africa that need to be addressed and further investigated. These include ambient pollution, massive urbanization, systematic deforestation, low birth weight, childhood undernutrition, prevalent chronic infection such as HIV and several social and commercial issues shown to affect population health, including the very high number of refugees and other forced migrants escaping from African regions affected by poverty, war, and terrorism.[2]

Facing this situation in Africa requires urgent implementation of several actions. These include: (1) extensive implementation of the WHO HEARTS technical package (made by modules spanning Healthy lifestyle, Evidence-based treatment protocols, Access to essential medicines and technology, Risk-based CVD management, Team-based care, and Systems for monitoring, HEARTS); (2) engagement to aim at health-promoting environments through salt-reduction policies and sugar and alcohol tax; (3) implementation of cost-effective screening and simplified treatment protocols to overcome treatment inertia by physicians and poor patients' adherence to prescribed treatment[2]; (4) decentralization

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of hypertension care of the primary health care systems and communities to increase the access to care, within a context of integrated care, while ensuring competencies to enhance care of conditions for which LMIC cannot afford to promote verticalized care.

GOALS OF THIS CALL TO ACTION

On such a background, we need a quantum leap in the fight against hypertension and its dreadful consequences, in support of WHO HEARTS programme.[65]

It is, therefore, mandatory that African countries accelerate the implementation of all necessary changes in health care management that might lead to an improved prevention and control of NCDs and to a quick reduction in the level of cardiovascular risk associated with hypertension.

This could be done through several specific interventions which include, among others: (1) enhanced detection and treatment of hypertension using low-cost single pill drug combinations,[66] (2) implementation of home BP monitoring, with easier access to telehealth and mobile health solutions whenever feasible,[67] (3) step down care, with implementation of team-based care by health care workers, (4) reduction in cost of drugs, and (5) availability of cheap but accurate BP monitoring devices.

There is also a need for setting national targets for hypertension control. We believe that, while promoting better health care, targets can be set which are ambitious but realistic as per the national context, and our aim is to promote titrated targets as per country context.

Indeed, target setting is a critical element for any program implementation. Targets are needed for the different elements in the care continuum. When promoting better hypertension control, targets to be defined include the indication of the proportion to be diagnosed among those expected to have hypertension; the proportion to be treated out of those diagnosed, and the proportion to be controlled at a given time point among those who are treated.

The present call to action thus aims to stimulate all African countries to fight hypertension by adopting the proposed solutions and to achieve the following 3 goals in Africa by 2030:

1. Eighty percent of adults with high BP in Africa are diagnosed. This would mean an almost 3-fold improvement from current awareness rate and could be obtained though: (1) Expansion of the scope of practice, skill and capacity of community health workers, public health practitioners, nurses, and pharmacists and trained lay people to screen for, diagnose and treat hypertension. (2) Empowerment of all adults to take responsibility for their health and wellbeing, seeking for BP screening, treatment, and control and adopting healthy lifestyle under supervision and according to agreed protocols and referral systems. An important step in this direction is to have BP measured accurately and regularly in all adults in Africa.
2. Eighty percent of diagnosed hypertensives, that is, 64 % of all hypertensives, are treated. This would mean a 3.5-fold improvement from current rate. To achieve this ambitious target, countries should implement patient-friendly and health system-sustainable models of care, including task sharing and multi-month pills refills for stable patients. Prices of antihypertensive medicines can also be reduced through increased demand, local production, and quality control, consolidating treatment algorithms and price negotiations.
3. Eighty percent of treated hypertensive patients, that is, 51.2% of all hypertensives, are controlled. This would mean a > \7-fold improvement from current rate (7%; Figure 1B).

As an intermediate step, we stimulate African Countries to have the current awareness, treatment and controlled rates doubled by 2025. This would mean a shift from 27% to 54%, from 18% to 36%, and from 7% to 14%, respectively.

We acknowledge the complexity of health care in Africa, where, in the context of a very high impact of the social determinants of health, there are different awareness, treatment, and control rates in different countries, given the huge diversity not only in their cultural and religious background but also in health care systems and in their policies across the African Continent. Thus, we know that our goals are very ambitious. However, we know that choosing ambitious targets helps to accelerate actions and give a sense of purpose in health-related campaigns. Moreover, evidence is available that relatively fast progress is possible early when starting from a very low level, as in the case of Africa.

SPECIFIC ACTIONS TO IMPLEMENT

As with all such calls to action, the implementation plan is critical. To achieve the above listed aims, we thus call on individuals and organizations from government, private sector, health care and civil society in Africa, and indeed on all Africans, to undertake the following high priority actions to improve the detection, diagnosis, management and control of hypertension, to be considered the leading preventable killer in Africa (Figure 2).

1. Actions for African governments to improve hypertension control in their populations:
   (i) Increase the diagnosis, treatment, and control of hypertension. This should be achieved through the following actions:
      (a) Adopt a robust national strategic plan for NCD that prioritizes and calls for resources for effective hypertension prevention and control. In this regard, politicians charged with prioritizing resource decisions related to malaria, HIV, or hunger due to poverty,

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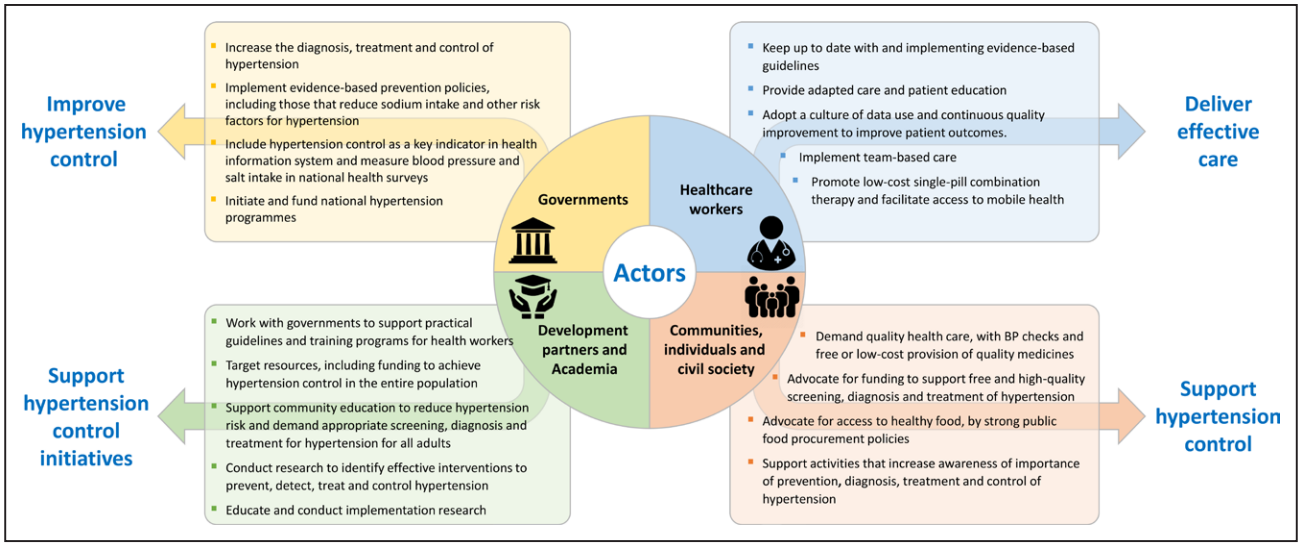

Figure 2. Specific actions to implement, to improve hypertension control in Africa.

should also address the silent killer, that is, hypertension, which is a major contributor to burden of illness in Africa.

(b) Issue appropriate orders and define health facilities reference staff, to ensure that BP measurement, diagnosis of hypertension, and management as per protocol is an essential service of primary health care and in ongoing programs such as HIV and tuberculosis. Allow nonphysician health providers with adequate education and training to diagnose and manage hypertension, under supervision and according to agreed referral systems.

(c) Ensure accurate measurement of BP at all routine adult clinic visits at all levels of health care and using all other opportunities such as markets, religious congregations, social events, vaccinations, political events, population census, elections etc, supported by massive awareness campaigns.

(d) Develop and implement hypertension diagnosis and treatment guidelines by adopting the WHO's HEARTS package.

(e) Ensure all hypertension medicines included in national guidelines are on the national essential medicines list, are procured from quality-assured providers, and are available free of cost or at affordable cost at all health facilities.

(f) Introduce regulations to ensure procurement of BP measurement devices that are validated for accuracy according to WHO and international and national societies of hypertension recommendations.

(g) Integrate hypertension detection, treatment, and control within existing health services, such as HIV care or diabetes care units and indeed in all health facilities.

(h) Make care patient-friendly, by decentralizing care and treatment of stable patients to the primary care level and by supporting visit spacing and extended drug refills for stable patients.

(i) Promote availability of low-cost single-pill combination therapy.

(j) Adopt strategies to improve access to care. Mobile-health, telehealth, decentralization of care to the bottom of health systems may be different options in different contexts

(ii) Implement evidence-based prevention policies, including those that reduce sodium intake and other risk factors for hypertension, such as:

(a) Design and implement regulations requiring packaged foods to include easy-to-interpret front of package labeling, such as warning labels, that enable consumers to avoid foods high in sodium and other unhealthy ingredients.

(b) Adopt sodium targets for different categories of packaged food.

(c) Enact public food procurement policies to address dietary risk factors for hypertension and CVD, by establishing nutritional standards.

(d) Support public health awareness campaigns on salt intake reduction, including through mass media campaigns aimed at educating people not only to control the salt content in packaged food, but also to avoid adding too much salt during cooking in foods such rice and other staple foods and to increase use of low sodium salts

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(that have some of the sodium replaced by potassium).

(e) Scale up tobacco and alcohol control, following the WHO's MPOWER (monitor tobacco use and prevention policies, protect people from tobacco smoke, offer help to quit tobacco smoking, warn about the dangers of tobacco, enforce bans on tobacco advertising, promotion and sponsorship, and raise taxes on tobacco) and SAFER (strengthen restrictions on alcohol availability; advance and enforce drink driving counter measures; facilitate access to screening, brief interventions and treatment; enforce bans or comprehensive restrictions on alcohol advertising, sponsorship, and promotion; and raise prices on alcohol through excise taxes and pricing policies) frameworks.

(f) Promote physical activity, including provision of safe environments and incentives for exercise. Education on the favorable effects of regular physical exercise should be provided.

(g) Scale up obesity control across the life course through education, exercise and diet.

(h) Establish intersectoral collaboration with the agricultural, food industry, educational and private sectors to control the food value chain and make healthy food available at homes, schools, and at work.

(iii) Include hypertension control as a key indicator in health information system and measure BP and salt intake in national health surveys.

(a) Annually monitor and report the detection, treatment and control rates of hypertension, with clear targets of improvement like the ones proposed in this call to action by 2025 and 2030. Achievement of these goals might be facilitated using the WHO stepwise surveillance approach in all countries, and ensuring that health information systems are in place and. where applicable. that they are inclusive of NCD indicators, which are lacking in most LMICs.

(b) Initiate and fund national hypertension programs

2. Actions for all African health care workers to deliver effective care:

(i) Keep up to date and implement evidence-based screening, diagnosis, and treatment guidelines. In particular, health care providers should be taught the correct procedures for BP measurement in the office, at home and over the 24 hours as outlined in the American Heart Association/American College of Cardiology BP measurement guidelines[68] and in the ESH Practice BP measurement guidelines.[69] Implementing accurate BP measurements was also recommended by the Pan-African Society of Cardiology task force on hypertension which in 2018 published a roadmap for better hypertension control in Africa.[70] Practical recommendations for accurate BP measurement are shown in Figure 3.

(ii) Provide patient-friendly and culturally adapted care and hypertension patient education and empowerment.

(iii) Adopt a culture of data use and continuous quality improvement to improve patient outcomes.

(iv) Implement team-based care and promote task shifting to lower levels of care.

(v) Promote availability of low-cost single-pill combination therapy and facilitate easier access to telehealth and mobile health.

(vi) Promote and standardize the role of pharmacists in both measuring BP and in being part of the team providing hypertension treatment. This possibility deserves a special mention, given that in many regions of Africa, health facilities are often distant, difficult to reach and poorly resourced, while it is easier to find a pharmacy in every village.

3. Actions for African communities, individuals and civil society to support hypertension control:

(i) Demand quality health care, including BP checks at least for all adults at clinic visits and the free or low-cost provision of quality medicines to reach hypertension control. Communities should create demand for high quality hypertension services, favoring the organization of a supply and demand model for hypertension services in Africa. Moreover, given that most of the rural SSA population will not go to a clinic nor will be available for any other form of routine medical visits unless they are seriously sick, rural community based "know your numbers" campaigns or outreach should be organized, with health care personnel going to the community door-to-door to measure BP, weight and other relevant clinical parameters, and providing training and education at the same time.

(ii) Advocate for adequate resourcing and funding (including from implementation partners, donors, insurance companies, etc) to support access to free and high-quality screening, diagnosis, and treatment of hypertension to all who need it.

(iii) Advocate for policies that support access to healthy food, such as strong public food procurement policies for schools, hospitals, and public workplaces.

(iv) Support activities that (1) increase community awareness of the importance of sodium reduction and obesity prevention to prevent hypertension

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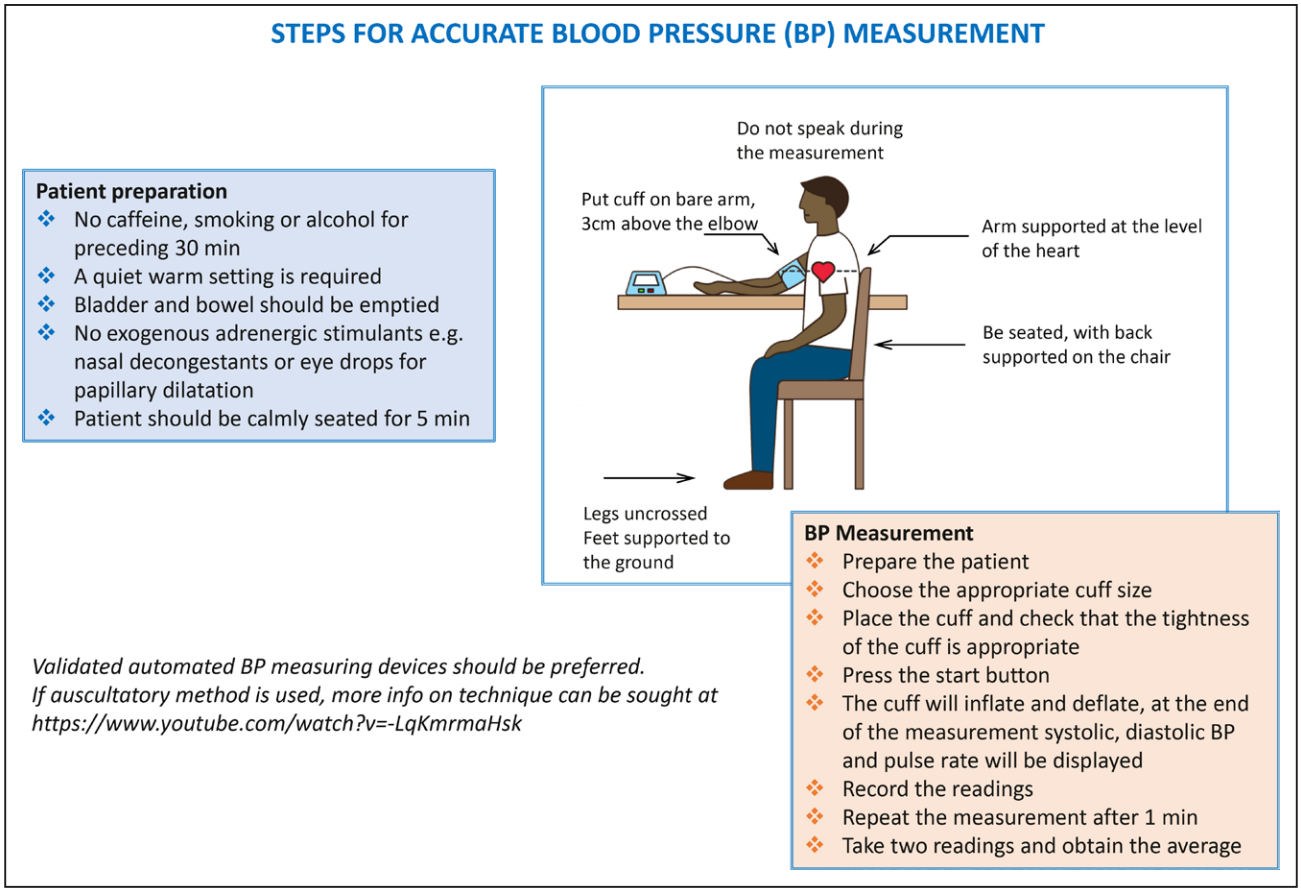

Figure 3. Recommendations for blood pressure (BP) measurement, thresholds, and action required following appropriate office measurement.

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and (2) emphasize the importance of early diagnosis, treatment and control of hypertension, and the disastrous consequences of uncontrolled hypertension. Given that rural adult population in SSA are not as well educated, health care officers should consider the possibility of using school going children as a means for education or outreach to their parents and grandparents. Faith based gathering may also be helpful in this regard.

(v) Support the diffusion of community-based organizations focused on hypertension, as done for HIV.

(vi) Provide feedback to government and health care workers as to the needs of the community and the quality of services provided

4. Actions for African development partners and academia to support hypertension control initiatives:

(i) Work with governments to support the design and implementation of simple, practical evidence-based policies, guidelines and programs, and regulated initiatives such as those on salt reduction, as well as courses and training and certification programs for health workers. Academic institutions and associated health care investigators should specifically play a major role in developing and or adapting guidelines balancing best evidence and local resources.

(ii) Target sustainable resources, including the proposal to have government officers in charge of health care management examine innovative funding platforms (eg, taxation on unhealthy foods, alcohol, and tobacco) to achieve hypertension control in the entire population.

(iii) Support community education to enable individuals and communities to take action to reduce their hypertension risk and demand appropriate screening, diagnosis, and treatment for hypertension for all adults.

(iv) Conduct focused implementation research on hypertension to identify effective, scalable interventions to prevent, detect, treat, and control hypertension. This should be done also following the example of a few intervention trials specifically focused on the best treatment to be implement for black African patients.[71]

(vi) Academia should also play an important role and collaborate with local governments in organizing education programs for health care personnel

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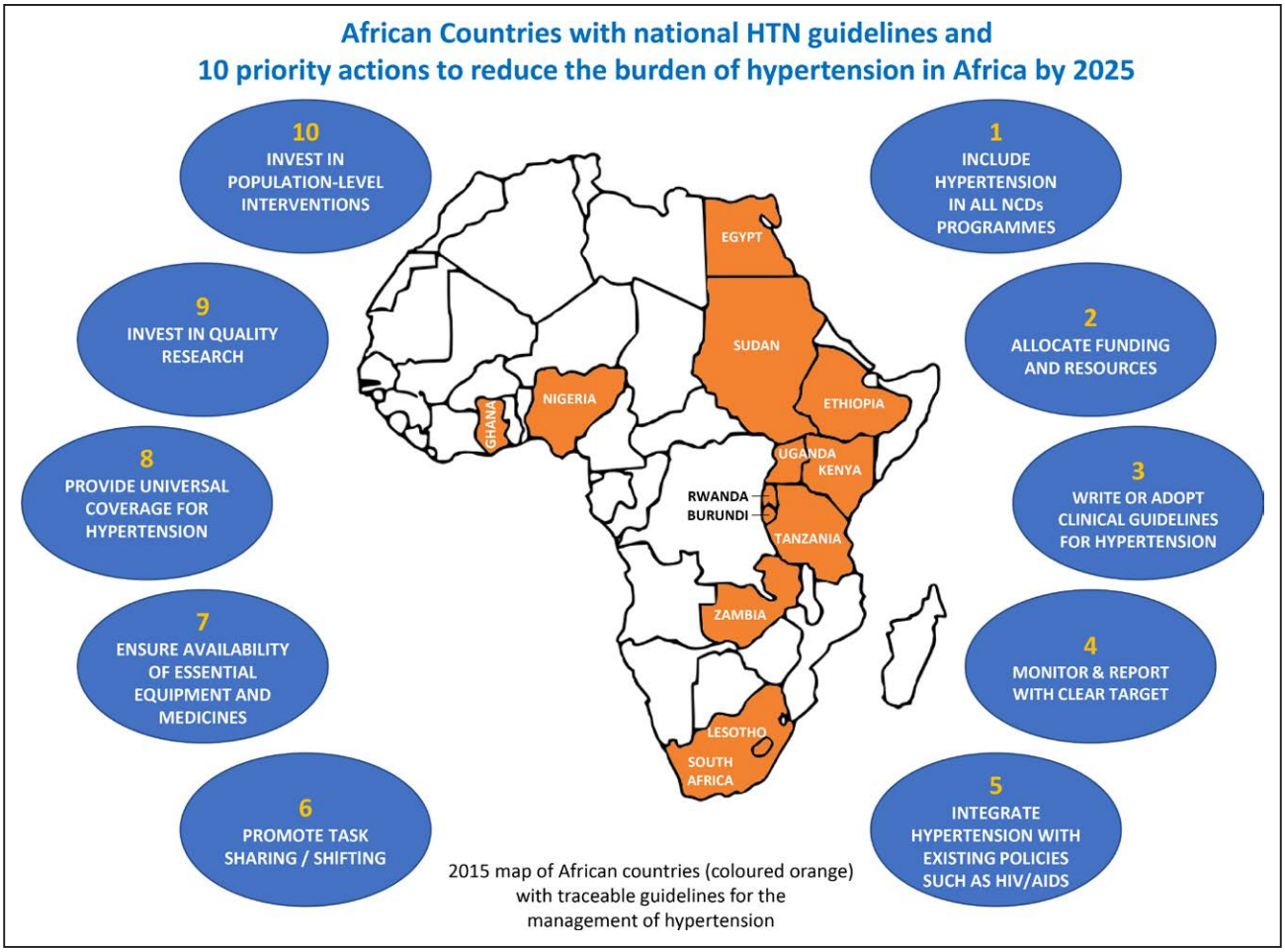

Figure 4. 2015 Map of African countries with evidence of existing clinical practice guidelines for hypertension management and 10 actions to reduce the hypertension burden in Africa.
NCD indicates noncommunicable disease. Modified from Dzudie et al[70] with permission. Copyright ©2020, Elsevier.

focused on hypertension. This should be done starting from the time of their initial training through the process of continuing medical education up to postdoc educational activities, with the aim to keep health care workers constantly updated on progress in knowledge. Also in this perspective, academia should collaborate with government in targeting resources to constantly promote continuous education programmes.

These recommendations follow and expand the recommendations yielded by the Pan-African Society of Cardiology task force on hypertension which in 2018 published a roadmap conceived by a variety of leaders and stakeholders in the field,[70] to propose a strategy aimed at achieving 25% control of hypertension by 2025. The roadmap identified major barriers to disease control and priority areas of intervention and proposed 10 actions to improve hypertension control by 2025. These actions are summarized in Figure 4, and are in line with our current recommendations.

We acknowledge that our current recommendations need to fit into the NCD control plans and programs already developed in many countries in Africa. To this aim, the current recommendations will be followed by another article specifically focusing on practical implementation of these recommendations. The writing group of this other article includes several health care providers specifically involved in hypertension management in different African countries.

Finally, the importance of the present call to action should be considered in the context of the COVID-19 pandemic. A meta-analysis by Ben Bepouka et al[72] has shown an increased risk of death in SSA COVID-19 patients with hypertension as compared with their counterparts who did not have hypertension. This finding provides additional support for the urgent need to achieve a better control of hypertension across Africa.

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None.

APPENDIX

Global Resources for Best Practices

Knowledge Action Portal: https://www.knowledge-action-portal.com/. LINKS Global Community for Cardiovascular Health: https://www.linkscommunity.org/. WHO HEARTS Technical Package: https://www.who.int/cardiovascular_diseases/hearts/en/. Pan American Health Organization: https://www.paho.org/hq/index.php?option=com_topics&view=article&id=218&Itemid=40876&lang=en. PAHO Virtual Campus for Public Health: https://mooc.campusvirtualsp.org/enrol/index.php?id=92. World Hypertension League: http://www.whleague.org/. Global Burden of Disease study: https://vizhub.healthdata.org/gbd-compare/. High blood pressure in Sub-Saharan Africa: Why prevention, detection and control are urgent and important. J Clin Hypertension 2014; doi: 10.1111/jch12599. Roadmap to achieve 25% hypertension control in Africa by 2025. Global Heart 2017;13:45–49.

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