

Resources for Blood Pressure Screening Programs in Low Resource Settings: A Guide From the World Hypertension League

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GLOBAL BURDEN OF HYPERTENSION

Hypertension is one of the most important risk factors for cardiovascular disease. The Global Burden of Disease Study in 2010 described hypertension as the leading risk factor for global disease burden, accounting for 18% of all deaths and 7% of global disability-adjusted life years.¹ Furthermore, hypertension is responsible for 45% of deaths caused by ischemic heart disease and 51% of deaths caused by stroke.²

As the leading risk for death and disability, hypertension requires a global response. Reducing uncontrolled blood pressure (BP) by 25% is one of nine United Nations targets to reduce noncommunicable diseases (NCDs) by 2025.³ To that end, hypertension was the feature of World Health Day in 2013.² The effort to reduce uncontrolled BP is based on two distinct, but integrated, approaches. One is to lower population BP through efforts such as reducing the amount of salt consumed, and the other is to identify people at risk for vascular disease and to clinically manage their hypertension to reduce global cardiovascular risk.⁴

The task of clinically managing increased BP globally is daunting. In 2008, 40% of the global population older than 25 years had hypertension, representing approximately 1 billion people.⁵ Further, the burden of hypertension is greatest where resources are the lowest.⁶ For example, the African region has a hypertension prevalence rate of 46% in adults older than 25 years, compared with the Americas, which have a prevalence rate of 35%.⁴ In Haiti, the prevalence rate of hypertension in men and women older than 40 years is 69.1% and 67.2%, respectively.⁷ Despite the high burden, awareness, and treatment, control rates are suboptimal in most developing countries, which are disproportionately impacted by hypertension. This also underlines the

“know-do gap” in terms of transfer of evidence to policy and practice.

Simply, the sequential steps to the clinical management of hypertension are: (1) the identification of people whose BP is high; (2) behavioral lifestyle counseling; (3) assessing vascular risk to identify those in whom pharmacologic interventions are cost-effective; (4) prescribing the indicated pharmacologic therapies to reduce vascular risk; and (5) titrating pharmacologic and lifestyle behavior therapy to achieve recommended risk target levels.^{8,9} In most low-resource settings (LRS), the current major initial barrier is the identification of people whose BP is high.²

BP screening programs are the first step in identifying a large number of people with hypertension,¹⁰ especially in LRS where many people are unaware and do not have adequate access to a health care system. Systematic reviews of the literature have recommended BP screening.^{11,12} Both the Canadian Task Force on Preventative Health Care (CTFPHC) and the US Preventive Task Force (USPSTF) have recommended screening for hypertension in adults aged 18 years or older.^{10,11} These systematic reviews demonstrate substantial indirect evidence that BP screening can identify adults at increased cardiovascular risk, that diagnosis of hypertension leads to treatment, and that treatment leads to improved cardiovascular outcomes.^{10,11} Hypertension control can thus be a gateway to manage other vascular and metabolic risks linked to NCDs. In a randomized controlled trial, Kaczorowski and colleagues demonstrated that a community-based BP screening program that included cardiovascular risk assessment and education sessions reduced cardiovascular morbidity and mortality.¹³ Additionally, there is evidence to suggest that once high BP is controlled in screened individuals, there is improvement in quality of life and work absenteeism.^{14–16} However, there are no standardized approaches to assist in the development of community-based BP screening programs in LRS.

The systematic reviews from the CTFPHC and USPSTF found scant literature on screening programs in LRS.^{10,11} While describing the Canadian landscape, Lindsay and colleagues⁵ demonstrated a higher

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prevalence of hypertension and cardiovascular disease among aboriginal populations, who also have reduced access to preventative health care, and called on practitioners to screen people who have infrequent access to health care. John and colleagues¹⁷ describes the success of a BP screening program in rural India, which uses trained primary care workers to screen older adults who do not have access to clinic-based screening. Similarly, Strogatz and colleagues demonstrate the utility of a hypertension screening program in rural North Carolina.¹⁸ Furthermore, Deepa and colleagues¹⁹ demonstrated that the “rule of halves” is still applicable in a large South Indian population, where approximately half of the individuals with hypertension are undetected, that half of those detected are not treated, and that half of those treated are not controlled. Indeed, LRS may require innovative and region-specific approaches to tackle the immense challenge of hypertension diagnosis and control.^{20–23} Successful approaches in LRS have been described by Kenerson with the implementation of the Haiti Hypertension Program²⁴ and by Ordunez-Garcia with the Cuban Hypertension Program.²⁵ These examples underline the immense need for creation and sustainability of valid BP screening programs in LRS.

In order to begin addressing this gap, a World Hypertension League (WHL) committee was established on “Blood Pressure Screening Programs in Low Resource Settings” to create and disseminate comprehensive and easy-to-use resources to aid in the development and sustainability of hypertension screening programs. To that end, the WHL has developed a standard set of resources to guide the development of BP screening programs in LRS. The recommendations and resources are outlined in this manuscript and can be found at <http://www.whleague.org/index.php/j-stuff/blood-pressure-assessment-train-the-trainer>. In addition, supporting videos on BP screening can be found at <http://www.whleague.org/index.php/j-stuff/resource-center>. It is noted that the WHL BP screening committee is pilot testing these resources with the intent to refine the recommendations and resources.

INTRODUCTION OF RESOURCES

The “Train the Trainer” module consists of a standard set of six resources followed by a quality-improvement feedback resource evaluation form intended to provide a practical framework on how to create, sustain, and evaluate BP screening programs in LRS. The resources are intended to be used by experts. Hence, perhaps the first need is for low-resource regions of the world and national hypertension organizations to develop “Train the Trainer” workshops to increase capacity to utilize the resources. The first meeting of the Pan-African Society of Hypertension in Cameroon, December 2014, hosted such a session.

Resource 1 introduces the critical components of a successful screening program. All adults older than 18 years old should be screened for hypertension.^{5,6}

However, if resources are scarce, most efforts should concentrate on more vulnerable individuals such as older adults. Key components of a successful BP screening program include training to accurately measure BP, use of accurate equipment, providing education on the meaning and health impact of hypertension, and adequate follow-up and access to health care for people with high BP. Other key issues described in this resource include the importance of assessing global cardiovascular risk in people with hypertension and locating the screening program in areas frequented by those at highest risk for hypertension.

Resource 2 describes the importance of appropriate selection of BP devices. In LRS, a semi-automated device that has passed international standards for accuracy is recommended. A link to approved devices is provided. We describe the challenges of LRS settings, including intermittent electricity, and offer potential solutions. We recognize that many centers use manual devices; however, they are not recommended because they are rarely used appropriately and require ongoing training and assessment. The WHL is currently involved in facilitating the field testing of automated BP devices.

Resource 3 and 3a describe a comprehensive algorithm on how to organize a BP screening training program. Key messages include selection of appropriate staff to oversee and conduct the screening. The program should include training on the risks of hypertension and nonpharmacologic treatment recommendations, such as the Dietary Approaches to Stop Hypertension (DASH) diet.²⁶ BP attendants should know how to accurately select cuff size, measure BP, interpret BP readings, and refer to health care professionals when needed. BP training should be formally evaluated through a standardized form (Resource 3a).

Resource 4 describes the recommended technique for measuring BP using a semi- or fully automated device in a screening program. Key components include selection of an appropriate device (semi- or fully automated when available), patient preparation, measurement technique, and recording on a data collection form. A picture illustrates the appropriate technique and patient preparation. The WHL Web site features a video illustrating the recommended BP measurement technique to aid in training and will be available in several languages (<https://www.youtube.com/watch?v=egBmUw0Y0IE>).

Resource 5 describes the appropriate interpretation of BP readings and dissemination of this knowledge to patients. A BP reading of <140/90 mm Hg is interpreted as normal and annual BP check is recommended. A BP reading of 140 mm Hg to 179/90–109 mm Hg is considered elevated and follow-up with a health care professional within a few weeks is recommended. Shorter follow-up is recommended with BPs that are in the higher range. A BP reading >180 mm Hg to 199/110 mm Hg is considered significantly elevated and follow-up with a health care professional as soon as possible is recommended. If a patient demonstrates

evidence of end-organ effects, such as chest pain, shortness of breath, or visual changes, immediate hospital referral is recommended. Resource 5 also includes a sample letter given to the patient that explains his/her BP, follow-up instruction, and lifestyle modifications to lower cardiovascular risk.

Resource 6 describes a BP data collection form to be used at screening programs. It is important not only to measure BP, but also to record BP readings in a standardized manner. These data are useful in assessment of the utility of a screening program. This serves to further enhance program development and research within communities and regions.

CALL TO ACTION

The clinical impact of undiagnosed hypertension in LRS has substantially increased on a global scale over the past few decades and is projected to increase further. NCDs are projected to be a significant barrier to economic development in LRS.⁴ BP screening programs provide a cost-effective and WHL-endorsed intervention to improve the rates of hypertension detection, control, and treatment, with the goal of reducing cardiovascular morbidity and mortality. WHL resources provide comprehensive and practical tools to establish and sustain a successful BP screening program. In the upcoming year there will be ongoing pilot testing of these resources in LRS. We call on national hypertension and cardiovascular organizations to make use of these resources in the development of BP screening programs. These resources will be updated regularly with ongoing feedback and field-testing results.

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