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HEARTS in the Americas: innovations for improving hypertension and cardiovascular disease risk management in primary care

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Abstract Global Hearts is the flagship initiative of the World Health Organization to reduce the burden of cardiovascular diseases, the leading cause of death and disability worldwide. HEARTS in the Americas Initiative is the regional adaptation that envisions HEARTS as the model for cardiovascular disease risk management, including hypertension and diabetes, in primary health care in the Americas by 2025. This initiative is entering its sixth year of implementation and now includes 22 countries and 1 380 primary health care centers. The objectives of this report are three-fold. First, it describes the emergence and the main elements of HEARTS in the Americas. Secondly, it summarizes the main innovations developed to catalyze and sustain implementation of the initiative. These innovations include: a) introduction of hypertension control drivers; b) development of a comprehensive and practical clinical pathway; c) development of a strategy to improve the accuracy of blood pressure measurement; d) creation of a monitoring and evaluation platform; and e) development of a standardized set of training and education resources. Thirdly, this report discusses future priorities of the initiative. The goal of implementing these innovative and pragmatic solutions is to create a more effective health system and shift the focus of cardiovascular and hypertension programs from the highly specialized care level to primary health care. In addition, HEARTS in the Americas can serve as a model for more comprehensive, effective, and sustainable noncommunicable disease prevention and treatment practices.

Keywords Hypertension; cardiovascular diseases; primary health care; public health; Americas.

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Cardiovascular diseases (CVD) are the leading cause of death in the Americas. In 2019, CVD accounted for two million lives lost, totaling a third of all deaths in the region (1). While substantial gains have been made over past decades, since 2017, the reductions in death rate have slowed and even stalled in some countries, and sociodemographic inequalities between and within the countries persist (2). Current prevention and control strategies are failing. A more effective, comprehensive, and sustainable approach is urgently needed to reduce the CVD burden and contribute to health systems resilience and the defense against the current coronavirus disease 2019 (COVID-19) pandemic and future pandemics (3).

Elevated systolic blood pressure (starting at ≥ 115 mmHg) is the leading cause of disability-adjusted life years globally and in the Americas. Moreover, over 50% of ischemic heart disease events and strokes are attributable to high blood pressure (4). Because hypertension can be prevented and treated through lifestyle interventions and medical treatment, it is an important target for improving health care systems. In 2019, 35.4% of adults in the Americas had high blood pressure (≥ 140/90 mmHg), but only 40.9% of women and 32.3% of men had it controlled, and only Canada exceeded 50% hypertension control rates (5).

In 2016, the World Health Organization (WHO) and other partners launched the Global Hearts Initiative (6). This initiative prioritizes a comprehensive set of evidence-based intervention packages to improve cardiovascular health. They include: MPOWER, for tobacco control; ACTIVE, for increasing physical activity; SHAKE, for salt reduction; and REPLACE, for eliminating industrially-produced trans fats from the global food supply. In addition, a health services technical package, HEARTS (**H**ealthy lifestyle, **E**vidence-based treatment protocol, **A**ccess to medicines and technologies, **R**isk-based approach, **T**eam-based care, **S**ystem for monitoring) and a new module **D** for Diabetes aims to strengthen the management of CVD in primary health care (PHC). This package focuses on clinical management of hypertension and diabetes.

The HEARTS in the Americas Initiative, spearheaded by the Pan American Health Organization (PAHO), is the regional adaptation of the WHO HEARTS technical package (7). PAHO implements the population-based packages (tobacco, salt, alcohol, and trans fat) in tandem with the HEARTS in Americas Initiative, its health-services arm. This paper focuses on the implementation strategy of the HEARTS in the Americas Initiative and encompasses systemic aspects informed by implementation science, including clinical, managerial, public health, and policy change. Implementing HEARTS in the Americas creates a new model that shifts the focus of hypertension and CVD secondary prevention management, including diabetes, from the secondary or tertiary level of care to the primary care setting, where most people with hypertension are diagnosed and treated, thus leading to a more effective health system.

This report describes the early development and implementation strategy of the HEARTS in the Americas Initiative, summarizes some of its most important innovations, and identifies priorities for its continuing expansion, with a regional goal to establish it as the model for CVD risk management by 2025.

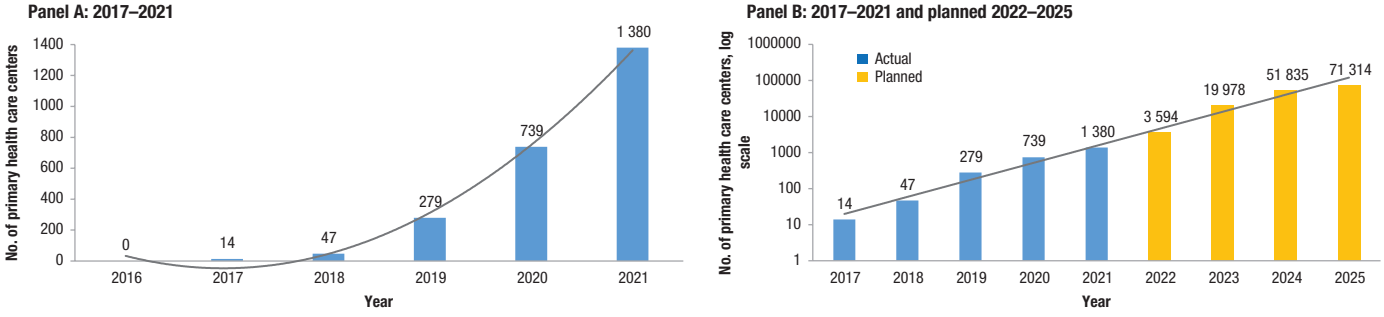
HEARTS IN THE AMERICAS INITIATIVE: BACKGROUND AND SALIENT ELEMENTS

This section briefly summarizes the history and expansion of the HEARTS in the Americas Initiative, its guiding principles, technical pillars, and implementation strategy. Then, it outlines the new hypertension management model – HEARTS – and compares it with traditional approaches to explain the concept.

Background

In 2013, the US Centers for Disease Control and Prevention and PAHO launched the Standardized Hypertension Treatment Project (8). Inspired by the success achieved by Canada (9) and Kaiser Permanente in the USA (10) and fully aligned with the chronic care model (11), the Standardized Hypertension Treatment Project encouraged the use of standardized treatment protocols, a core set of high-quality, affordable medicines, patient registries for cohort monitoring, and team-based care. At the end of 2015, the Standardized Hypertension Treatment Project was successfully piloted in Barbados and, a year later, it was introduced in parallel in Colombia, Cuba, and Chile. Implementation in those countries confirmed that this standardized treatment model improved hypertension control (12) and was well accepted by patients, providers, and funders. Subsequently, in 2017, the Standardized Hypertension Treatment Project evolved into WHO Global HEARTS (6) and regionally into HEARTS in the Americas (7). The original cohort of four countries has now expanded to 22 Latin American and Caribbean countries and the initiative is being implemented in 1 380 PHC centers (Figure 1)

FIGURE 1. Cumulative number of countries and primary health care facilities implementing HEARTS in the Americas (panel A) and projections for 2025 (panel B)



Source: Prepared by authors for this paper.

Guiding principles

The rapid expansion of the HEARTS Initiative is based on an implementation strategy (13) and a set of guiding principles. The first principle is establishing country ownership. HEARTS is led by the ministries of health, with the participation of other stakeholders and PAHO's technical cooperation. Countries make political and programmatic decisions. The second principle is that the elements of the initiative are kept simple and practical. The initiative provides pragmatic, cost-effective, and feasible solutions to PHC. The third principle is its focus on evidence-based interventions. HEARTS is a technically robust model that promotes the adoption of best practices in preventing and controlling CVD and improving the organization of health services through efficient management of hypertension and CVD secondary prevention, including diabetes. The fourth principle is accountability. HEARTS is a data-driven initiative, and documenting both qualitative processes and quantitative outcomes is a core feature of the initiative. The fifth principle is continuous learning. An important element of the model is its reliance on continuous learning cycles and peer-led teaching, and the dissemination of effective innovations and lessons learnt during implementation. The sixth principle is establishing long-term sustainability. This is achieved by: integrating elements of the HEARTS model into the existing health care systems; using available resources; identifying and supporting successful pre-existing projects and programs; continuously improving performance and outcomes; and taking advantage of and building leadership and technical capabilities to optimize resources and synergies. Finally, the seventh principle relates to empowering, investing in, and increasing PHC capacity. Successful implementation of HEARTS in the Americas regionally will depend on the number of countries and PHC facilities implementing this model and the speed of its institutionalization (13).

Technical pillars

While the HEARTS principles guide the work, the technical pillars describe what is done in countries. HEARTS technical pillars are defined as priority lines of work that support the initiative's vision, facilitate programmatic implementation, channel technical resources, and promote innovation (13). The technical pillars comprise standardized training and education, accurate blood pressure measurement, simple specified treatment protocols, team-based care, research and evaluation, and data use.

Implementation strategy

The HEARTS in the Americas Initiative developed an implementation strategy to adapt it to country realities and needs, facilitate implementation, and catalyze health system changes. Indeed, HEARTS has developed a phased approach for implementation, allowing countries to start small and scale up gradually. This is one of the reasons countries were able to initiate implementation quickly. The different processes in all countries have shown that implementing HEARTS is a highly complex process influenced by multiple economic, cultural, and political factors, both local and national. Its implementation is an iterative and dynamic process that requires strategic leadership, systematic planning, and continuous quality monitoring and improvement. Implementing HEARTS involves a three-phase cycle: first, assessing the health problem by conducting a situation analysis, including baseline and systematic data analysis; second, developing the implementation plan with PAHO's technical cooperation and international and local experts and stakeholders; and third, introducing and monitoring HEARTS implementation at every province, locality, or jurisdiction. After every cycle, with the active participation of an engaged team, the national leadership reinforces what works and modifies what does not, paying particular attention to capacity-building (13, 14). Problems encountered in different countries, the lessons learnt during implementation, and how the initiative worked around the problems have been documented elsewhere (7, 13).

HEARTS versus traditional models

Given that traditional delivery models within the health system for hypertension and CVD secondary prevention have shown poor performance and not achieved the needed hypertension and CVD secondary prevention control rates, HEARTS in the Americas promotes and implements a new model (Table 1).

Traditional hypertension – and diabetes – programs are often created and overseen at the highly subspecialized second or third level care facilities. Consequently, health professionals' current education and training are centered on and influenced by the subspecialists. Very often, the traditional model uses the subspecialist as the main treatment method and the first line of care, which in the long run delays access to care and fragments care due to a lack of standardized treatment and a team-based care approach. The HEARTS model refers patients to specialist care when hypertension control is not achieved within the different steps of the standardized procedures. HEARTS also proposes a standardized training and education model focused on a PHC team that is more accessible and better informed about the community, patients, and context (7).

The traditional physician-centered care model may not be ideal for supporting the team-based care approach recommended by current hypertension guidelines. Models based on secondary- and tertiary-level care and physician-centered care create significant barriers to access, generate more exclusion and inequity, and lead to fragmentation and lack of continuity of care. HEARTS uses a team-based approach involving task shifting to provide better access to and more effective use of resources. Team-based care is a strategic and coordinated redistribution of work among team members. In this model, all members of the team play a specific role in providing patient care. Task shifting is the reassignment of clinical and non-clinical tasks from one level or type of health worker to another to provide health services more efficiently and effectively (15).

Within the traditional model, decision-making is based on complex clinical guidelines, ultimately driven by the prescribing physician's preference and availability of medicines. In contrast, HEARTS introduces a simple treatment algorithm that a primary health team can effectively implement, which is fully aligned with the 2021 WHO guideline on hypertension (16). In addition, selection of medication prioritizes effective antihypertensive drugs (e.g., long-acting and fixed-dose combination pills) from a treatment algorithm starting with halved doses of two combined antihypertensive medications from

TABLE 1. Traditional versus HEARTS approach to hypertension and cardiovascular disease risk management

Characteristic	Traditional model	HEARTS in the Americas model
Level of care	Specialty-based	Primary care-based
Provider model	Physician-centered	Team-based care with task shifting
Training and education	Not standardized; centered on specialists	Standardized; focused on the primary health care team
Decision-making	Individualized based on complex clinical guidelines	Standardized clinical pathway with a specific treatment protocol
Blood pressure measurement	Non-standardized techniques. Blood pressure measuring devices not necessarily validated and thus accuracy not guaranteed	Adoption of standardized technique and regular training. Exclusive use of automated blood pressure measuring devices, the accuracy of which is validated
Therapeutic approach	Physician preferences and complex medication-based pharmacological formularies	Standardized, simple, specified treatment algorithm using fixed-dose combination pills and specific, timely follow-up intervals
Cardiovascular disease risk evaluation	Discretionary	Integrated into the standardized clinical pathway with a focus on cardiovascular disease secondary prevention including diabetes
System for monitoring	Mainly for administrative purposes	Clinical monitoring, performance evaluation, and systematic feedback

Source: Prepared by authors for this paper.

complementary classes (17, 18), while allowing the use of the antihypertensive medicine available in the country and gradually moving to preferred more effective antihypertensive drugs.

The traditional model does not emphasize enough the quality of blood pressure measurement for screening, diagnosis, and treatment, which consequently leads to over- or under-treatment of hypertension. Therefore, to increase accuracy in the measurement of blood pressure, HEARTS adopted a standardized technique and recommends regular training on this technique for members of the health care team so they perform the task accurately (19) and the exclusive use of clinically validated automated blood pressure measuring devices (20).

Furthermore, secondary prevention of CVDs is underused in the traditional model. Indeed, treatment with four proven drugs (aspirin, angiotensin-converting enzyme (ACE) inhibitors, statins, and beta-blockers for patients with ischemic heart disease) and smoking cessation will prevent or postpone up to 75–80% of recurrent vascular events and their complications, including death and disability. Secondary prevention can also reduce health care costs, increase economic productivity, and improve quality of life (21).

Finally, the limited capacity of the health information systems in many countries reveals the lack of political support to respond to a central health system issue: the lack of good-quality data for clinical monitoring and performance evaluation (13). Therefore, the health information system needs to be prioritized as one of the main components of a health system for HEARTS implementation.

INNOVATING WITH HEARTS IN THE AMERICAS

The dynamic and participatory nature of the HEARTS implementation strategy feeds a cycle of constant communication from the field, generating feasible solutions to challenges that arise in real-life scenarios. This bidirectional exchange is an innovative feature of the HEARTS Initiative, which has been gradually systematized as described in the following sections.

Key drivers to improve hypertension control

The primary aim of HEARTS in the Americas is to help health system leaders, managers, and clinical providers make specific clinical and managerial process improvements in hypertension control at the PHC level. Therefore, identifying which factors in the system drive or impede change is a critical step. To this end, the HEARTS Innovation Group defined and operationalized the key drivers to improve hypertension control in PHC practice (22).

The work of the HEARTS Innovation Group (22) was based on first studying high-performing health systems (9, 10, 23). Systematic reviews identified eight drivers, which were categorized into five domains: 1) diagnosis (blood pressure measurement accuracy and CVD risk evaluation); 2) treatment (standardized treatment protocol and treatment intensification); 3) continuity of care and follow-up; 4) delivery system (team-based care and medication refill); and 5) performance evaluation (Table 2). These drivers and the specific implementation recommendations were then translated into process measures, which resulted in two interconnected indexes (maturity and performance indexes). Finally, these indexes were integrated into the HEARTS clinical pathway (24) and HEARTS monitoring and evaluation system (25). Focus on these key drivers during implementation is expected to enhance the quality improvement process and hypertension control at the PHC level.

Clinical pathway for standardized hypertension treatment and CVD risk management

Hypertension guidelines have been a cornerstone for diagnosing and managing hypertension. However, most current guidelines do not address implementation. Furthermore, many national drug formularies and medicines lists are outdated and impractical, limiting treatment adherence and resulting in obstacles to hypertension control (13). To be more functional, the guidelines need an algorithm or standardized treatment protocol which has limited branches and fewer steps (simple, direct), and is composed of available and affordable medicines (always accessible), with good side-effect profiles (well-tolerated), once-a-day dosing (practical), and which lower blood pressure equally across a broad range of demographics and thus across populations (effective). Adopting simple algorithms and small, carefully managed, and standardized hypertension medication formularies, supported by the local legislative environment, might facilitate task shifting to less specialized health care workers, and the provision of fixed-dose combinations,

TABLE 2. HEARTS in the Americas: key drivers for hypertension control and recommendations for implementation

Hypertension control drivers		Recommendations for implementation
Diagnosis	1. BP measurement accuracy	Establish training on BP measurement every 6 months for all staff involved with BP measurement.
		Institute standardized BP measurement protocols, including patient preparation and repeated BP measurement if the first BP reading is elevated.
		Implement the exclusive use of a validated automatic blood pressure measuring device for clinical practice.
	2. CVD risk assessment	Assess the CVD risk in all patients with hypertension to guide BP goal and frequency of follow-up.
		Use combination BP medication, statin, aspirin (as indicated) in patients with high CVD risk, including those with diabetes and chronic kidney disease.
Treatment	3. Standardized treatment protocol	Institute a standardized treatment protocol with specific medications and doses.
		Establish protocol using fixed-dose combination medication.
	4. Treatment intensification	Initiate pharmacological treatment with two antihypertensive medications, preferably in a fixed-dose combination, immediately after the diagnosis of hypertension is confirmed.
		Increase medication dosage, or add another medication, as per standard protocol, if BP ≥ 140/90 or systolic BP ≥ 130 mmHg for high-risk patients on subsequent encounters.
Continuity of care and follow-up	5. Continuity of care and follow-up	Follow up patients with elevated BP within 2–4 weeks if not controlled.
		Arrange BP visit within 6 months for all patients with stable and well-controlled BP.
		Arrange BP visit/encounter within 3 months for all patients with hypertension and high CVD risk, including diabetes and chronic kidney disease.
Delivery system	6. Team-based care and task shifting	BP measurement taken by appropriately trained and certified non-physician health worker.
		Conduct follow-up BP visits with non-physician health worker under supervision and guided by the protocol.
		Medication titration by a non-physician health worker under supervision and guided by the protocol.
	7. Medication refill frequency	Implement standard 3-month refill intervals for all BP medication prescriptions for patients with stable and controlled BP.
System for performance evaluation	8. System for performance evaluation with feedback	Implement monthly performance evaluation with feedback to facilitate progress tracking, prevent substantial deviations, and promote timely program corrections.

BP, blood pressure; CVD, cardiovascular diseases.
Source: Adapted from Brettler JW, et al. (22).

thus simplifying laboratory requirements and lowering out-of-pocket expenses for people (26).

HEARTS in the Americas developed methodologies to support the implementation of a population-based standardized hypertension treatment protocol. This protocol is rooted in a seamless transition from existing treatment practices (current and acceptable protocols) to best practice (preferred protocols) using pharmacological protocols built around a core set of ideal antihypertensive medications. This protocol calls for the rapid control of blood pressure through rapid titration of two antihypertensive medications, preferably in a single pill, fixed-dose combination, in the initial treatment of hypertension (18). HEARTS in the Americas also defined the critical processes for selecting preferred and acceptable fixed-dose combination medications for inclusion in national formularies (17). As a result, the recommended fixed-dose combinations now supported by the WHO essential medicines list (27) was included by the PAHO Strategic Fund in a short list of medicines to support countries of the Americas procure high-quality medicines at competitive prices (28).

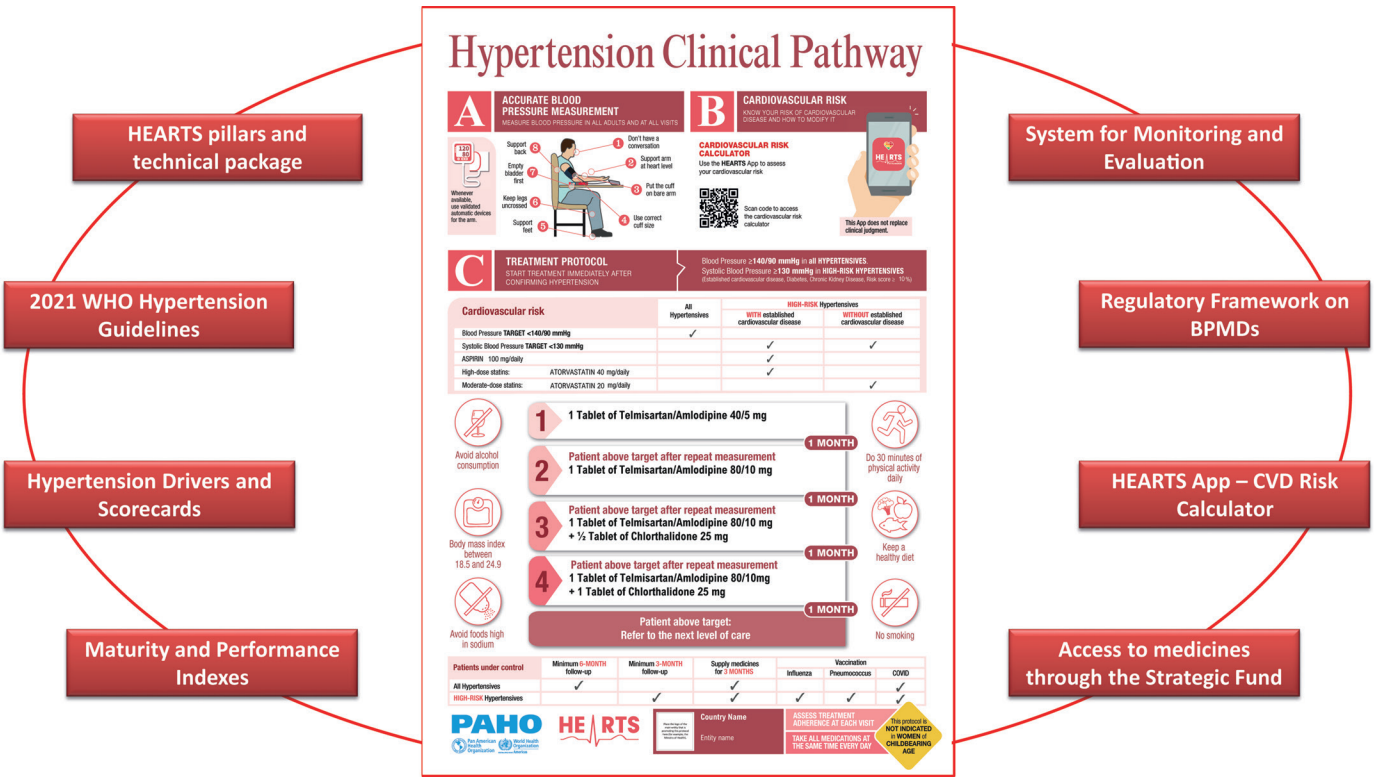
In order to make the new treatment algorithms user-friendly, HEARTS in the Americas developed a software application (app) (https://www.paho.org/en/hearts-americas/cardiovascular-risk-calculator-app). The app includes: the 2019 WHO CVD risk charts (29) adapted by HEARTS in the Americas for use as an online calculator; the standardized hypertension treatment algorithm defined by each implementing country; a short video describing how to obtain accurate blood pressure measurement; and recommendations for optimizing CVD risk assessment for primary and secondary prevention and modifying CVD risk through pharmacological and non-pharmacological interventions (30). As of June 2022, more than 110 000 health care providers are using the HEARTS application.

Following WHO's publication of the guideline for the pharmacological treatment of hypertension in 2021 (16, 31), HEARTS in the Americas developed a clinical pathway (24). This new tool, which is designed to be used by all the health care team, harmonizes all the recommendations of the WHO hypertension guideline, including those on blood pressure measurement, CVD risk evaluation, and management of primary and secondary prevention (diabetes, chronic kidney disease, and established CVD), but maintains the HEARTS hypertension standardized treatment algorithm at its core. All countries implementing HEARTS are currently adapting their HEARTS clinical pathway (Figure 2).

Accurate blood pressure measurement

Accurate blood pressure measurement is key to effective diagnosis and management of hypertension. It is one of the six strategic pillars of the HEARTS in the Americas Initiative and one of its key drivers to improve hypertension control (22). The lack of accurate blood pressure measurement is a serious and frequent problem of contemporary clinical practice that can potentially compromise patient safety and negatively affect the health system (32). For instance, a study in the USA showed that

FIGURE 2. HEARTS clinical pathway for standardized hypertension treatment and CVD risk management



CVD, cardiovascular diseases; WHO, World Health Organization; BPMDs; blood pressure measuring devices.
Source: Prepared for the authors and adapted from: Campbell NRC, et al. (42).
Note: The medications serve as examples and can be replaced with any two medications from any of the three drug classes (angiotensin-converting enzyme inhibitors/angiotensin receptor blockers, calcium channel blockers, or thiazide/thiazide-like diuretics). Start with a single-pill combination (fixed-dose combination) or two individual pills if a fixed-dose combination is not available.

a systematic blood pressure measurement error in adults not taking antihypertensive medications of 5 mmHg (higher and lower) would over- or under-estimate the prevalence of high blood pressure by 44% or 22%, respectively. This error would thus lead to 23.6 million people being unnecessarily treated for hypertension and 19.2 million people with high blood pressure not being identified for treatment (33).

Accurate blood pressure measurement requires proper patient preparation, a comfortable and quiet environment, well trained and certified health personnel using a standardized measurement protocol, and an automated blood pressure measuring device (BPMD) that has been clinically validated to determine accuracy according to an internationally recognized validation protocol (34). Unfortunately, current regulatory frameworks for validating BPMD in countries of the Americas are weak and fragmented, allowing devices to be cleared for marketing without evidence of accuracy validation (35). This problem could affect proper diagnosis and clinical care because validated automated BPMD are more accurate than non-validated devices (36). A recent study revealed that only 23% of the automated upper-arm devices and 11% of wrist-based devices globally have evidence of validation for accuracy (37).

HEARTS in the Americas has developed a set of strategic actions and produced practical resources to address these essential issues (20), including communication and education materials to increase advocacy, awareness, training, and certification of PHC teams, and a guidance document to help countries to strengthen their regulatory frameworks and procurement process to ensure the exclusive use of clinically validated automated BPMD (38). Accordingly, many PHC facilities implementing HEARTS have prioritized both the training and certification of their personnel in correct blood pressure measurement and the use of validated automated BPMD (38–40) (Table 3).

Platform for monitoring and evaluation

HEARTS is a data-driven initiative. However, the weaknesses of the health information systems are a barrier to its implementation in most implementing countries. Few countries have a single, interoperable national health information system, while many have multiple data systems that are not interconnected (13). Consequently, most countries lack functional data collection and reporting mechanisms to identify areas for potential improvement. As a result, PHC facilities cannot consistently identify and correct operational gaps in their performance, which is essential for good governance.

To catalyze the necessary health system changes, HEARTS in the Americas has developed a system for monitoring and evaluation to be used by each PHC facility implementing the HEARTS Initiative (25). This monitoring and evaluation system is modeled on a framework created by PAHO and the World Hypertension League for use in hypertension programs (41). The HEARTS monitoring and evaluation system is based on the socioecological model and was designed to collect aggregate data on the structure, demographics, process, and health outcomes at the facility level to identify strengths and weaknesses

TABLE 3. HEARTS in the Americas: resources to improve the accuracy of blood pressure measurement

Resource	Link
List of validated automated blood pressure measuring devices	https://www.paho.org/en/documents/lists-validated-automated-blood-pressure-measuring-devices
HEARTS in the Americas regulatory pathway to the exclusive use of validated blood pressure measuring devices	https://iris.paho.org/handle/10665.2/55382
Technical resources relevant to the accuracy of blood pressure measurement	https://www.paho.org/en/documents/technical-resources-relevant-accuracy-blood-pressure-measurement
Requirements for obtaining an accurate blood pressure reading: infographic	https://www.paho.org/en/node/70200
GIF: how to get an accurate blood pressure reading	https://www.paho.org/en/node/70740
Virtual course on accurate automated blood pressure measurement	https://bit.ly/PAHOVC-Blood-Pressure-Measurement

Source: Prepared by authors for this paper.

TABLE 4. HEARTS in the Americas: training and education materials

Courses and webinars	Links
Virtual courses at PAHO's virtual campus for public health	
Hypertension control drivers at primary health care centers	https://bit.ly/PAHOVC-HypertensionCntrlDrivers
Update on hypertension management and cardiovascular risk in primary care level	https://bit.ly/PAHOVC-UPDT-HTN-CVRISK-PHC
Accurate automated blood pressure measurement	https://bit.ly/PAHOVC-Blood-Pressure-Measurement
Implementation of the HEARTS technical package in primary health care	https://bit.ly/PAHOVC-HEARTS
Secondary prevention of cardiovascular disease	https://bit.ly/CVOPSPrevSecundECV
HEARTS webinars series	
Innovating in HEARTS: hypertension control drivers and scorecards	https://www.youtube.com/watch?v=jyfYjk_0QC8
World Heart Day: 2021. WHO Guideline for the pharmacological treatment of hypertension	https://www.youtube.com/watch?v=yWMIyhvjehc&t=6s
Science in action for better cardiovascular health. The cases of Cuba and Mexico	https://www.youtube.com/watch?v=DtT2uoenBNA
Building bridges between societies of cardiology and primary health care teams	https://www.youtube.com/watch?v=qWYRMfmLz5g
HEARTS in the Americas introduces the new improved cardiovascular risk calculator App	https://www.youtube.com/watch?v=TZIF7Dv6Lfg
Measure your blood pressure accurately, control it, live longer!	https://www.youtube.com/watch?v=6t43gCR5Hjo
Standardized hypertension treatment algorithms and PAHO Strategic Fund for Universal Health	https://www.youtube.com/watch?v=4Le6N3yBKKU
HEARTS – cardiovascular disease and COVID-19: inter-relationship and opportunities for change of two global crises	https://www.youtube.com/watch?v=RBf5_rmC-90
HEARTS in the Americas on World Hypertension : introducing a new virtual course to improve blood pressure measurement	https://www.youtube.com/watch?v=sHzcbkqc2Sk
New developments and resources	https://www.youtube.com/watch?v=5KouHWRHihY
No data—no progress. HEARTS is a data-driven program	https://www.paho.org/en/events/no-data-no-progress-hearts-data-driven-program
Practical resources on how to check for validated blood pressure measurement devices	https://youtu.be/eEq0qk235u0

PAHO, Pan American Health Organization; COVID-19, coronavirus disease 2019.
Source: Prepared by authors for this paper.

and assess program maturity and performance. This information system and data flow provide more readily available, actionable data to improve hypertension control, including for people with a high CVD risk and diabetes. The monitoring and evaluation system also allows health care teams and communities to be kept informed and engaged and to hold the leadership at different levels accountable. Finally, a goal of the monitoring and evaluation system is to expose inequities and generate investment to tackle them (25).

Training and education for PHC teams

PHC teams are the most important actors of the HEARTS in the Americas Initiative. Since the successful implementation of the model will largely depend on their level of commitment, knowledge, and skills, the initiative has devoted considerable effort to creating and disseminating a standardized set of educational resources. The educational materials are aligned with the main interventions and oriented towards PHC teams. The goal has been to support a change of clinical practices in the work environment towards a team-based approach, where task distribution and task shifting play a crucial role.

The standardized education and training resources, including communication materials, are available on an open-access platform, and classes are virtual to facilitate access to resources. In addition, the initiative hosts regular webinars for a broad audience to exchange experiences between countries and disseminate new tools and updated technical information (Table 4). These resources have had a broad reach with 300 000 professionals enrolled in virtual courses hosted on PAHO's Virtual Campus for Public Health and 25 000 participating in webinars.

WAY FORWARD

With most countries in the Americas region already implementing the HEARTS Initiative, the initiative is finding new

opportunities to institutionalize the model and promote changes in health systems.

Countries implementing HEARTS have defined key programmatic priorities for the following years: 1) expand the overall number of PHC centers implementing the initiative to maximize the benefits for a larger population and increase its political traction, 2) adopt the HEARTS monitoring and evaluation platform to catalyze health system changes; 3) implement a comprehensive hypertension clinical pathway, including diabetes and CVD secondary prevention, integrating the key drivers for hypertension control; and 4) promote the exclusive use of validated automated BPMD in PHC facilities. In addition, HEARTS in the Americas has recognized the valuable opportunity represented by the 2021 WHO guidelines oh hypertension treatment (16, 31) to catalyze the adoption of the HEARTS model. HEARTS in the Americas is therefore urging health policy-makers to promote its speedy and full implementation (42).

On its journey, HEARTS in the Americas has uncovered a set of structural challenges for health systems when tackling noncommunicable diseases and proposed innovative solutions to help break political inertia, improve access to high-quality health care, and address technical shortcomings. The institutionalization of HEARTS in the Americas, its complete orientation towards the PHC level, and the adoption of a public health perspective are central to changing the traditional model and achieving sustainability. In addition, the implementation and expansion of the WHO Global HEARTS approach, both the population and health system technical packages, are fundamental to reverse the trends in CVD observed in the past decade. Furthermore, this approach can also serve as an enabling factor to rebuild health systems after the disruption caused by the COVID-19 pandemic (3, 43).

This report calls to action national and local governments, academia, professional associations, patient organizations, civil society, and other stakeholders to support – initiate and scale-up – the implementation of HEARTS as a means to: expand universal access to health; strengthen PHC-oriented health systems; improve prevention and control of CVD and noncommunicable diseases; and ultimately reduce the health disparities in one of the world's most inequitable regions.

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HEARTS en las Américas: innovaciones para mejorar el manejo del riesgo de hipertensión y enfermedades cardiovasculares en la atención primaria

RESUMEN Global Hearts es la iniciativa emblemática de la Organización Mundial de la Salud para reducir la carga de las enfermedades cardiovasculares, la principal causa de muerte y discapacidad en todo el mundo. La iniciativa HEARTS en las Américas es la adaptación regional que propone HEARTS como modelo para el manejo del riesgo de enfermedades cardiovasculares, incluida la hipertensión, y la diabetes en la atención primaria de salud en la Región de las Américas para el año 2025. Esta iniciativa está iniciando su sexto año de aplicación y ya incluye a 22 países y 1 380 centros de atención primaria de salud. Son tres los objetivos de este informe. En primer lugar, describir cómo surgió la iniciativa HEARTS en las Américas y cuáles son sus principales elementos. En segundo lugar, resumir las principales innovaciones logradas para catalizar la iniciativa y mantener su aplicación. Entre estas innovaciones se encuentran: *a*) la introducción de factores impulsores del control de la hipertensión; *b*) el desarrollo de una vía clínica integral y práctica; *c*) la elaboración de una estrategia para mejorar la precisión de la medición de la presión arterial; *d*) la creación de un marco de seguimiento y evaluación; y e) la elaboración de un conjunto estandarizado de recursos de capacitación y formación. En tercer lugar, en este informe se examinan las futuras prioridades de la iniciativa. El objetivo de poner en marcha estas soluciones innovadoras y pragmáticas es crear un sistema de salud más efectivo y trasladar el enfoque de los programas cardiovasculares y de hipertensión del nivel de atención altamente especializada a la atención primaria de salud. Además, HEARTS en las Américas puede servir como modelo para unas prácticas más integrales, efectivas y sostenibles en la prevención y el tratamiento de las enfermedades no transmisibles.

Palabras clave Hipertensión; enfermedades cardiovasculares; atención primaria de salud; salud pública; Américas.

HEARTS nas Américas: inovações para melhorar a gestão do risco de hipertensão e de doenças cardiovasculares na atenção primária

RESUMO *Global Hearts* é a iniciativa mais importante da Organização Mundial da Saúde para reduzir a carga de doenças cardiovasculares, que são a principal causa de morte e incapacidade em todo o mundo. A iniciativa HEARTS nas Américas é a adaptação regional que pressupõe a HEARTS como o modelo para a gestão do risco de doenças cardiovasculares, incluindo hipertensão e diabetes, na atenção primária à saúde nas Américas até 2025. Essa iniciativa está entrando em seu sexto ano de implementação e agora inclui 22 países e 1 380 centros de atenção primária à saúde. Os objetivos deste relatório são três. Primeiramente, ele descreve o surgimento e os principais elementos da iniciativa HEARTS nas Américas. Em segundo lugar, resume as principais inovações desenvolvidas para catalisar e sustentar a implementação da iniciativa. Essas inovações incluem: a) introdução de fatores impulsionadores de controle da hipertensão; b) desenvolvimento de um caminho clínico abrangente e prático; c) desenvolvimento de uma estratégia para melhorar a exatidão da aferição da pressão arterial; d) criação de uma plataforma de monitoramento e avaliação; e e) desenvolvimento de um conjunto padronizado de recursos para treinamento e educação. Em terceiro lugar, este relatório discute as futuras prioridades da iniciativa. O objetivo de implementar essas soluções inovadoras e pragmáticas é criar um sistema de saúde mais eficaz e mudar o foco dos programas cardiovasculares e de hipertensão do nível de atendimento altamente especializado para a atenção primária à saúde. Além disso, a iniciativa HEARTS nas Américas pode servir de modelo para práticas mais abrangentes, efetivas e sustentáveis de prevenção e tratamento de doenças não transmissíveis.

Palavras-chave Hipertensão; doenças cardiovasculares; atenção primária à saúde; saúde pública; América.