HEARTS IN THE AMERICAS

Quality Improvement for Primary Health Care Centers

PAHO

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Washington, D.C., 2024
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Acknowledgements

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## Abbreviations and acronyms

<table>
<thead>
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<th>Description</th>
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<tr>
<td>PHC</td>
<td>primary health care</td>
</tr>
<tr>
<td>ARB</td>
<td>angiotensin receptor blocker</td>
</tr>
<tr>
<td>CCB</td>
<td>calcium channel blocker</td>
</tr>
<tr>
<td>FDC</td>
<td>fixed-dose combination</td>
</tr>
<tr>
<td>CV</td>
<td>cardiovascular</td>
</tr>
<tr>
<td>BP</td>
<td>blood pressure</td>
</tr>
<tr>
<td>DMPA</td>
<td>blood pressure measuring device</td>
</tr>
<tr>
<td>CVD</td>
<td>cardiovascular disease</td>
</tr>
<tr>
<td>NCD</td>
<td>noncommunicable diseases</td>
</tr>
<tr>
<td>HTN</td>
<td>arterial hypertension</td>
</tr>
<tr>
<td>ACEI</td>
<td>angiotensin-converting enzyme inhibitor</td>
</tr>
<tr>
<td>CCM</td>
<td>chronic care model</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>PAHO</td>
<td>Pan American Health Organization</td>
</tr>
<tr>
<td>BP</td>
<td>blood pressure</td>
</tr>
<tr>
<td>SBP</td>
<td>systolic blood pressure</td>
</tr>
<tr>
<td>PDSA</td>
<td>Plan-Do-Study-Act</td>
</tr>
<tr>
<td>HSN</td>
<td>integrated network of health service delivery</td>
</tr>
<tr>
<td>TZ</td>
<td>thiazide</td>
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</table>
HEARTS in the Americas for Better Care for Noncommunicable Diseases (NCDs) in Primary Care Settings

HEARTS in the Americas is an operational framework that will contribute to increasing equitable access to comprehensive NCD management in primary health care (PHC) under PAHO’s new initiative “Better Care for NCDs: Accelerating Actions in Primary Health Care.”

**Better Care for NCDs**
**Accelerating Actions in Primary Health Care**

Expanding equitable access to integrated and comprehensive NCD services in primary health care by:

- Strengthening the capacity of health authorities to plan and implement this approach.
- Increasing the capacity of health services to deliver comprehensive quality screening, diagnosis, treatment, and follow-up.
- Strengthening data collection and monitoring.

**Multidisciplinary approach focused on six strategic areas:**

1. Country plans for scale-up and expansion of comprehensive NCD services in primary health care, including Telehealth
2. Community outreach and participation in NCD services, with focus on equity
3. Normative NCD guidance and quality of NCD care improvement
4. Primary health care workforce development for NCDs
5. Expansion of essential NCD medicines and technologies
6. Improvement of NCD information and monitoring

**HEARTS in the Americas**
A platform for expanding comprehensive NCD services
Introduction

Cardiovascular diseases represent the main cause of mortality and morbidity in the Region of the Americas, with hypertension being the primary risk factor for these diseases. Despite notable advances in recent decades, a deceleration in the downward trend of mortality from these diseases has been observed in most countries, and it has even begun to increase in some. This phenomenon jeopardizes the goal of reducing premature mortality from noncommunicable diseases by 30% by 2030, a commitment made by all countries in the Region (1).

There is a strong association between the population’s control of arterial hypertension and mortality from cardiovascular diseases. Countries with higher levels of population control of arterial hypertension have achieved greater reductions in mortality from these diseases. In the Americas, for every 1% increase in the level of arterial hypertension control in the population, an estimated 2.9% reduction in deaths from ischemic heart disease per 100,000 inhabitants is observed, equivalent to 25 639 preventable deaths (2.5 deaths per 100 000 inhabitants), and a 2.37% reduction in deaths from stroke per 100 000 inhabitants, equivalent to 9650 preventable deaths (one death per 100 000 inhabitants). In fact, if Latin America and the Caribbean increased the population control level of arterial hypertension from 28.7% to 50.0%, around 459 000 deaths could be saved (331 000 from ischemic heart disease and 128 000 from stroke) (2).

The slowdown in the decline of mortality from cardiovascular diseases in the Americas, coupled with suboptimal levels of control of arterial hypertension in the population, suggests that the current health services model is exhausted, and a paradigm shift is imperative. In this context, the HEARTS initiative in the Americas by the Pan American Health Organization (PAHO) emerges, a regional adaptation of the World Health Organization’s (WHO) Global HEARTS strategy. HEARTS in the Americas aims to be the institutionalized model for hypertension control and comprehensive cardiovascular risk management throughout the Region by 2025. This initiative, based on primary health care, is led by health ministries and technically supported by PAHO. It is currently being implemented in 33 countries in the Region and aims to be fully deployed throughout each country’s health system (3).

HEARTS in the Americas is not a vertical program but a multi-component initiative based on solid scientific evidence, focusing on comprehensive cardiovascular risk management and continuous quality improvement. This initiative aims to influence how health services are delivered, with the goal of changing clinical and management practices and, consequently, establishing a new care paradigm that positively impacts health indicators.

Quality goals

The HEARTS Quality Program in the Americas promotes improvement in the structural conditions of health services, the systematic implementation of a key set of clinical and management processes known as drivers for hypertension control, and the routine use of a monitoring and evaluation system to measure the level of implementation maturity and program performance in primary health care settings. Systematic implementation, including monitoring and evaluation of hypertension control drivers, constitutes the core of the HEARTS quality improvement program.

Purpose

This document summarizes the fundamental elements for quality improvement in primary health care centers, under the premise of ensuring that individuals receive effective, efficient, timely, equitable, ethical, and evidence-based care. We trust that this document will encourage and assist primary care teams on their journey towards continuous quality improvement, thereby positively impacting the health of the populations they serve.


1. Essential Clinical Tools for Quality Improvement

Here, the clinical tools of HEARTS in the Americas are detailed, and are essential for understanding and implementing the quality improvement approach. Each of these tools provides practical information, supported by robust scientific evidence, and is oriented towards the primary healthcare teams, who are ultimately responsible for driving improvements in the quality of care.
HEARTS in the Americas: a new paradigm in the prevention of cardiovascular disease

The trend toward a reduction in cardiovascular mortality in the Americas has stagnated and even reversed in many countries. HEARTS in the Americas represents a paradigm shift in the comprehensive approach to cardiovascular disease (CVD) prevention, focusing on hypertension diagnosis and treatment as the main risk factor for CVD.

In the Region of the Americas, more people die each year from cardiovascular diseases than from any other cause, and HYPERTENSION is the main risk factor.

4 out of 10 adults have HYPERTENSION (BP ≥140/90)

1% control the population level

2.9% ISCHEMIC HEART DISEASE MORTALITY

2.4% STROKE MORTALITY

ACCESS and QUALITY gaps

- Inadequate diagnosis, nonstandardized, and nonvalidated blood pressure measuring devices (BPMDs).
- Physician-based care with a focus on specialty care.
- Deficient and nonstandardized staff training and education.
- Discretionary treatments, highly variable, and according to physician preferences.
- Interventions based on extensive and complex clinical guidelines.
- Lack of a system for monitoring and evaluation based on quality improvement.

THE SOLUTION

- Comprehensive strategy focused on primary health care.
- Health care based on healthcare team, with nonphysician professionals playing a more prominent role.
- Standardized diagnosis using clinically validated BPMDs.
- Clinical pathway containing a standardized treatment protocol with specific medications and doses.
- Standardized training and education strategy oriented to change practice.
- System for monitoring and evaluation containing structure, process, and result indicators, based on continuous quality improvement.


Hypertension treatment cascade: closing the care gap

The primary goal of HEARTS in the Americas is to ensure that more than half of individuals with hypertension can achieve and maintain their blood pressure levels within the target range over time (BP < 140/90 mmHg for non-high-risk hypertensive individuals and SBP < 130 mmHg for those with ischemic heart disease, cerebrovascular disease, peripheral vascular disease, diabetes, chronic kidney disease, or a 10-year estimated CV risk greater than 10%) (see Table 1). To achieve this, it is necessary to diagnose at least 80% of individuals with hypertension, treat at least 80% of those diagnosed, and control at least 80% of those under treatment.

### Table 1. Hypertension treatment cascade: components, indicators, and public health implications.

<table>
<thead>
<tr>
<th>COMPONENTS</th>
<th>INDICATORS</th>
<th>PUBLIC HEALTH IMPLICATIONS</th>
</tr>
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<tbody>
<tr>
<td>Prevalence of hypertension in the population.</td>
<td>The proportion of people in a given population or population group with</td>
<td>Level of performance that a given country or region has had in preventing and treating hypertension in the population.</td>
</tr>
<tr>
<td></td>
<td>elevated BP according to a pre-specified standard (BP ≥ 140/90) or who</td>
<td></td>
</tr>
<tr>
<td></td>
<td>state that they are taking medication to lower blood pressure.</td>
<td></td>
</tr>
<tr>
<td>Prevalence of awareness of the hypertensive</td>
<td>The proportion of people with hypertension in a given population or</td>
<td>Proxy of access to preventive clinical care. It is equivalent to the capacity of a health system to screen and diagnose people with hypertension timely.</td>
</tr>
<tr>
<td>condition (sometimes used as equivalent to</td>
<td>population group who know or have been diagnosed with hypertension or</td>
<td></td>
</tr>
<tr>
<td>diagnosis).</td>
<td>are taking medication to lower blood pressure.</td>
<td></td>
</tr>
<tr>
<td>Prevalence of antihypertensive treatment among</td>
<td>The proportion of people in a given population or population group who</td>
<td>Proxy of access to pharmacological treatment. It is equivalent to the capacity of a health system to ensure continuous and timely pharmacological treatment of people with hypertension.</td>
</tr>
<tr>
<td>those who know or have been diagnosed with</td>
<td>know or have been diagnosed with hypertension and are taking medication</td>
<td></td>
</tr>
<tr>
<td>hypertension.</td>
<td>to lower blood pressure.</td>
<td></td>
</tr>
<tr>
<td>Prevalence of control among those receiving</td>
<td>The proportion of people in a given population or population group who</td>
<td>Proxy of quality of care-treatment. It is equivalent to the ability of a health system to achieve the clinical standard of control.</td>
</tr>
<tr>
<td>antihypertensive treatment.</td>
<td>are undergoing pharmacological treatment for hypertension and who meet the standard of care (e.g., BP &lt; 140/90 or &lt; 130/80 mm Hg).</td>
<td></td>
</tr>
<tr>
<td>Population hypertension control</td>
<td>The proportion of people in a given population or population group with</td>
<td>Proxy of the overall performance of the program. It is equivalent to the capacity of a health system to provide access and quality care to achieve BP control levels in its population.</td>
</tr>
<tr>
<td></td>
<td>elevated BP according to a pre-specified standard (BP ≥ 140/90) or who</td>
<td></td>
</tr>
<tr>
<td></td>
<td>state that they are taking medication to lower BP and who meet the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>quality of care standard (e.g., BP &lt; 140/90 or &lt; 130/80 mm Hg).</td>
<td></td>
</tr>
</tbody>
</table>

BP: blood pressure; SBP: systolic blood pressure.
Age-standardized prevalence of undiagnosed (unawareness) hypertension, aware but untreated, aware and treated but not controlled, and controlled hypertension by country and sex in 1990, and their trends in the Region of the Americas, 1990–2019

For more information:
8 recommendations in 5 questions

A. When TO INITIATE pharmacological TREATMENT?

1. BP thresholds to initiate medication
   - Those with a diagnosis of hypertension and BP ≥ 140/90 mmHg
   - Those with CVD and SBP 130–139 mmHg
   Recommendation: strong
   Evidence: moderate–high certainty
   - Those without CVD but with HIGH CVD RISK and SBP 130–139 mmHg
   Recommendation: conditional
   Evidence: moderate–high certainty

B. What MEDICATIONS to use?

4. First-line medications
   - ACEi/ARB
   - Dihydropyridine CCB
   - TZ/TZ-like diuretic
   Recommendation: strong
   Evidence: high certainty

5. Combined treatment
   - COMBINE an ACEi or ARB + a CCB or a TZ/TZ-like diuretic
   Preferably in a SINGLE PILL COMBINATION to improve adherence and persistence
   Recommendation: conditional
   Evidence: moderate certainty

C. What are the control TARGETS?

6. BP control targets
   - BP < 140/90 mmHg in those WITHOUT HIGH CVD RISK
   - SBP < 130 mmHg in those WITH CVD
   Recommendation: strong
   Evidence: moderate certainty
   - SBP < 130 mmHg in those without CVD but with HIGH CVD RISK
   Recommendation: conditional
   Evidence: moderate certainty

D. When to assess CVD RISK?

2 & 3. CVD RISK
   - Obtain laboratory tests and assess CVD risk systematically but only if IT DOES NOT DELAY HYPERTENSION TREATMENT
   Recommendation: conditional
   Evidence: low certainty

E. How to establish the FOLLOW-UP intervals?

7. Follow-up intervals
   - MONTHLY until reaching BP CONTROL
   - EVERY 3–6 MONTHS in CONTROLLED BP
   Recommendation: conditional
   Evidence: low certainty

8. Team-based care
   - TREATMENT PROVIDED by NONPHYSICIAN PROFESSIONALS under supervision and following a protocol
   Recommendation: low certainty
   Evidence: conditional

Note: ACEi: angiotensin converting enzyme inhibitor; ARB: angiotensin receptor blocker; CCB: calcium channel blocker; TZ: thiazide
Key interventions for the management of cardiovascular disease risk

Improving clinical processes is a central element in closing quality gaps in the delivery of health services and positively impacting coverage and control indicators. For this reason, the HEARTS Innovation Group has defined key interventions to achieve this.

### Areas

1. **Diagnosis**
   - Accuracy of BP measurement
   - CVD risk assessment

2. **Treatment**
   - Treatment protocol
   - Treatment intensification

3. **Continuity of care**
   - Follow-up frequency

4. **Delivery system**
   - Team-based care
   - Medication refill frequency

5. **Performance evaluation**
   - System for monitoring

### Drivers

### Interventions

**Accuracy of BP measurement**
- a. Blood pressure measurement training every 6 months
- b. Blood pressure measurement protocol
- c. Use automated and clinically validated BPMDs

**CVD risk assessment**
- a. Classify patients according to their CVD risk
- b. Use statins and aspirin according to risk level and history of CVD

**Treatment protocol**
- a. Institutionalized clinical pathway
- b. Use fixed dose combinations

**Treatment intensification**
- a. Initiate treatment without delays
- b. Intensify treatment until reaching BP control

**Follow-up frequency**
- a. Monthly follow-up until reaching BP control
- b. 6-monthly follow-up in non high-risk patients with controlled BP
- c. 3-monthly follow-up in high-risk patients with controlled BP

**Team-based care**
- a. Non physician community health workers measure BP
- b. Nurses follow patients
- c. Nurses intensify pharmacological treatment following the clinical pathway

**Medication refill frequency**
- a. Medication refill every 3 months

**System for monitoring**
- a. Monitoring and evaluation system with monthly feedback

---

Note: BPMDs: blood pressure measuring devices

The HEARTS in the Americas Clinical Pathway

The clinical pathway represents the main implementation tool of the HEARTS in the Americas Initiative. It summarizes, in a single page, the comprehensive management of cardiovascular risk in primary health care, incorporating the WHO hypertension guideline recommendations and the HEARTS drivers. Hence, the clinical pathway becomes a powerful tool to strengthen management, clinical practice, and community action.


HEARTS training and education resources

Continuous training and education of the healthcare team is essential to provide quality care. HEARTS in the Americas has developed a set of free and open access courses with the collaboration of scientific organizations and international experts. Each course provides a PAHO certificate with academic hours and a unique badge.

Access HEARTS virtual courses by clicking here:

1. Hypertension Control Drivers at Primary Health Care Centers
   [WEBSITE ACCESS]

2. Accurate Automated Blood Pressure Measurement
   [WEBSITE ACCESS]

3. Hypertension and Cardiovascular Risk Management in Primary Health Care
   [WEBSITE ACCESS]

4. Implementation of the HEARTS Technical Package in Primary Care Health Teams
   [WEBSITE ACCESS]

5. Supporting Primary Health Care Teams to Use Blood Pressure Medications Effectively
   [WEBSITE ACCESS]

6. Home Blood Pressure Monitoring
   [WEBSITE ACCESS]

Access HEARTS virtual courses by clicking here.
Monitoring and Evaluation System for quality improvement

The System for Monitoring and Evaluation of HEARTS in the Americas is a tool for quality management based at the primary health care center. Developed under the open-source platform DHIS2, it allows health teams to report the variables linked to their professional practice and obtain periodic reports that enable them to evaluate their performance and results.

Based on the health center

- Designed for and by the primary health care team.
- Real-time analytical and systematized report.
- Control dashboard to assess implementation maturity and performance over time.

Built on the open-source DHIS2 platform

- Interoperable with multiple electronic health record systems.
- Free, open for use, and does not require a permanent Internet connection.
- Dynamic technology adoption, ensuring robust solutions that operate in resource-constrained environments.

Indicators aligned with programmatic priorities

- Aimed at evaluating all aspects of HEARTS implementation.
- Aggregate data to protect the privacy of the medical record.
- Allows for the identification of implementation gaps.

Structure Module
- Health center resources

Process Module
- Diagnostic and therapeutic interventions

Results Module
- Coverage and control rates

Implementation Maturity Index

Performance Index

Instrumental for the continuous quality improvement process

- Access to information under a hierarchical structure to facilitate management at different levels.
- Allows comparison between different health centers to promote learning based on best practices.
- Generates evidence to guide decision-making, identify common problems, and support strategies for target-oriented intervention design.

The definition of programmatic components is essential for the effective planning, implementation, and evaluation of the HEARTS initiative. Each of these elements contributes to ensuring that the program is consistent, effective, and sustainable in achieving its objectives.
2.1 **Attributes to establish a successful population-based hypertension control program**

Hypertension programs require strong political will, effective coordination mechanisms at all levels of the healthcare system, stakeholder participation, robust community activism, established health and financial protection mechanisms, budget allocation, and an effective primary healthcare approach capable of reaching the entire population, especially the most vulnerable.

Successful hypertension programs share interconnected and relevant attributes (see Table 2). Combining implementation strategies with awareness campaigns can generate a synergistic effect. Adapting and addressing various elements of this strategy is necessary for most hypertension control programs, depending on their context and specific circumstances.

**Table 2. Attributes to establish a successful program**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Bold leadership with a sense of urgency to drive change, particularly in primary healthcare settings.</td>
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<tr>
<td>Basic infrastructure to build trust within the community it serves, including easy and cost-free access at the point of care.</td>
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<tr>
<td>A basic set of affordable, quality medications for hypertension, statins, and diabetes medications, including those that protect the kidneys.</td>
<td></td>
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<tr>
<td>Clinically validated automated blood pressure measurement devices.</td>
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</tr>
<tr>
<td>Adequate, motivated, fairly compensated, and well-trained workforce for team-based care.</td>
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</tr>
<tr>
<td>Timely, accurate, reliable, and efficient mechanisms for the detection, diagnosis, and monitoring of individuals with hypertension.</td>
<td></td>
</tr>
<tr>
<td>A clinical pathway containing a simple and standardized treatment protocol with specific medications and doses.</td>
<td></td>
</tr>
<tr>
<td>A functional health information system for clinical monitoring and enabling performance evaluation and team feedback.</td>
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</table>
The expanded model of chronic disease care

In 2002, WHO developed an enhanced version of the Chronic Care Model (CCM). The Innovative Care for Chronic Conditions Framework emphasizes community and policy aspects to improve health care for chronic diseases. HEARTS is based on this expanded WHO Chronic Care Model and represents its practical application in the field of cardiovascular disease prevention.

2.2 Chronic Care Model (CCM)

The CCM underscores the importance of primary health care, recognizing that the best clinical outcomes are achieved when all its components work in a coordinated manner. This approach, endorsed by PAHO, is based on principles aligned with its strategies to strengthen healthcare systems, with a particular emphasis on primary care and service integration.

Integrated Health Service Delivery Network (HSN)

PAHO suggests the implementation of Health Services Networks (HSNs) as the recommended solution for organizing care in the Primary Health Care (PHC) strategy. HSNs are responsible for improving the health status and clinical outcomes of a specific population. These networks are comprehensive, spanning all levels of prevention and care, with effective coordination and integration across all settings, including the community. Additionally, their goal is to provide continuous services over time.

Productive Interaction and Healthcare Team Preparation

The CCM establishes that all system components are designed to foster productive interaction between informed and active patients and a prepared and proactive healthcare team.

For more information:
2.3 How to improve quality at the primary healthcare center level?

In HEARTS in the Americas, we employ the improvement model developed by Associates in Process as a reference to enhance quality. While it is not necessary to abandon your organization’s existing quality model, the one recommended has proven successful in hundreds of healthcare organizations in different countries. It is simple, intuitive, and promotes engagement, participation, and accountability throughout the team.

1. Formation of the Quality Committee. (Refer to section 2.4.)

2. Implementing the quality improvement model.

<table>
<thead>
<tr>
<th>KEY QUESTIONS</th>
<th>ACTIONS</th>
<th>DEFINITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are we trying to achieve?</td>
<td>Objective</td>
<td>To increase hypertension control in the adult population (define age group) in the catchment area of [insert health center name] by [insert year].</td>
</tr>
</tbody>
</table>
| Define objectives and goals | Goals | • Increase the detection of individuals with hypertension from X% to 80% by [insert year].  
• Increase hypertension control in individuals on antihypertensive treatment from X% to 80% by [insert year]. |
| Define outcome measures | HEARTS performance index | **Coverage**  
Level of performance, goal, and scores | POOR (<50%) | INCipient (≥ 50%) | ON Track (≥80%) | HIGH (≥70%) | EXCELLENT (≥80%) |
| | | 0 | 1 | 2 | 3 | 4 |
| | Control (<140/90 mmHg) among all hypertensives treated | 0 | 1 | 2 | 3 | 4 |
| | Control (SBP <130 mmHg SBP) among all hypertensives-high CVD risk | 0 | 1 | 2 | 3 | 4 |
| Define process measures | HEARTS maturity index* | **Level 1** | **Level 2** | **Level 3** | **Level 4** | **Level 5** |
| | | 7-10 | 11-14 | 15-18 | 19-21 |
| | * The levels demonstrate implementation from lowest level (1), incipient to highest level (5) mature. |

CVD: cardiovascular disease; SBP: systolic blood pressure.

For more information:
2.4 Formation of the health center Quality Committee

The Quality Committee effectively leads the quality improvement program at the healthcare center level. Its role is to design interventions, promote their implementation, evaluate them, and propose timely corrective actions. The team’s mission is to achieve the highest quality standards established by the program.

**HEALTH CENTER QUALITY COMMITTEE**

1. **COMMITTEE FORMATION**

   Ensure that the group is composed of individuals committed to change, with technical expertise, knowledge of the program, the context, and the local culture, and with effective capacity to drive and implement changes.

   It is recommended that the quality committee includes representation from the community served by the healthcare center.

   Appoint a capable and willing leader for the committee.

2. **DEFINE STANDARDS AND GOALS**

   - Assign the mission and mandate
   - Set the corresponding timelines

3. **DEFINE RULES AND OPERATING MECHANISMS**

4. **ESTABLISH A TRAINING PLAN**

   It is strongly recommended that committee members are certified with at least two of the HEARTS in the Americas courses:

   - Implementation of the HEARTS Technical Package in Primary Healthcare.
   - Key Drivers for Improving Hypertension Control in Primary Healthcare Centers.

5. **IT IS ESSENTIAL THAT HEALTHCARE FACILITY MANAGEMENT PARTICIPATES ACTIVELY AND IS WILLING TO IMPLEMENT THE CHANGES IDENTIFIED BY THE QUALITY COMMITTEE**

6. **THE PROGRAM MUST BE ETHICALLY RESPONSIBLE, RESPECTFUL OF CULTURE AND VALUES, AND BASED ON INCENTIVES INSTEAD OF REPRIMANDS**

7. **AFTER COMPLETING THE PREVIOUS STEPS, CONDUCT THE SITUATIONAL ANALYSIS AND ESTABLISH THE BASELINE**
The Continuous Quality Improvement Cycle

HEARTS in the Americas has identified effective interventions for improving hypertension control. These evidence-based interventions, aligned with the WHO hypertension guidelines, are known as the drivers for hypertension control. The HEARTS quality cycle describes the phases in the progressive implementation of these drivers and is presented as an interactive cycle to achieve the highest quality standards.

The Plan-Do-Study-Act (PDSA) cycle (see Figure 2) is a concise methodology for testing a change in the real work environment. It involves planning the change, implementing it, observing the results, and taking action based on the learning obtained. It is essentially an adaptation of the scientific method for action-oriented learning.

Figure 2. Continuous Quality Improvement Cycle
3.1 Step 1. Planning

3.1.1. Vision, commitment, and mandate

QUALITY COMMITTEE ALIGNMENT MEETING

The health center manager invites the Quality Committee to:

1. Present the context assessment: Highlight necessary attributes for a healthcare quality program (see section 2.1.).
2. Share baseline assessment data: Use maturity and performance indices to identify issues and solutions.
3. Define actions: Differentiate between executable actions at the health center and those requiring external resources or approval.
4. Establish a plan: Concrete, innovative, realistic, and with a sense of urgency for quality program implementation.

SOCIALIZATION MEETING

The manager presents the quality program, objectives, goals, and the Quality Committee’s mandate to the entire health center team and community representatives. The focus is on achieving informed participation of all stakeholders.

QUALITY COMMITTEE PRESENTATION

The Quality Committee is responsible for presenting:

1. Situation Report: Focused on process improvement to enhance service quality. Use the HEARTS maturity and performance index baseline to highlight gaps and set quality standards.
2. Actionable Plan: Concrete, actionable, specific, realistic, context-adapted, verifiable, time-bound, and clearly defining responsibilities.

DISCUSSION OF THE PROPOSED PLAN

The manager invites the entire team to discuss the proposed plan, encouraging active participation and gathering ideas and proposals.

QUALITY PLAN DEFINITION

Definition of the health center’s quality plan, detailing actions, implementation timelines, measurement criteria, responsible parties, and accountability mechanisms.

TWO-YEAR IMPLEMENTATION PLAN

Establish a two-year implementation plan, with in-depth assessments every six months, to address deviations in a timely manner and ensure effective interventions in the following six months.
3.1 Step 1. Planning

3.1.2. Situation analysis

All successful quality improvement programs begin with a deep understanding of the problem and include problem definition, goal, objectives, and interventions.

**DATA AND STRUCTURE ANALYSIS: INITIAL EVALUATION**

Gather available and relevant structure, process, and outcome data for implementing the program at the healthcare center level.

**DETAILED REVIEW OF THE 17 RECOMMENDATIONS**

Objectively evaluate the recommendations (see Table 2), identifying specific corrective actions to close quality gaps.

**COVERAGE DATA ESTIMATION**

- Make the best possible estimation of coverage data for hypertension diagnosis and control.
- If data is not available for the health center, define more suitable indicators using subnational or national data.

**MONITORING AND EVALUATION SYSTEM DESIGN**

- Appoint a responsible person and an alternate, ensuring they receive the necessary training.
- Strongly recommend using the HEARTS in the Americas Monitoring and Evaluation System (see section 3.3). Its adoption ensures that the health center can access a dashboard that facilitates the visualization of key process and outcome results.
- Utilize the Monitoring and Evaluation System as effectively as possible, adapting it to the level of development of your healthcare center’s information system.

**ESTABLISHMENT OF BASELINE**

Set the baseline for the HEARTS in the Americas maturity and performance indices.
3.1.3. Baseline assessment of the HEARTS maturity index

1. Calculate the baseline for the HEARTS maturity index.

2. Define the actions necessary to implement one or more of the 17 established recommendations, specify timelines, and identify those responsible (see Table 2).

3. Discuss the planned changes with all stakeholders.

4. Define indicators for measuring the results of the changes to be implemented.
### Table 3. 17 recommendations

<table>
<thead>
<tr>
<th>Hypertension control drivers</th>
<th>Recommendations for implementation</th>
<th>Goals</th>
<th>Score (points) Total = 21</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diagnosis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. BP measurement accuracy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.a. Establish BP measurement training every six months for all staff involved with BP measurement.</td>
<td>&gt;=90%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1.b. Institute standardized BP measurement protocols, including patient preparation and repeated BP measurement if the first BP reading is elevated.</td>
<td>&gt;=90%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1.c. Implement the exclusive use of validated automatic BPMD for clinical practice.</td>
<td>&gt;=90%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>CVD risk assessment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.a. Assess the CVD risk in all patients with hypertension to guide BP goal and frequency of follow-up.</td>
<td>&gt;=80%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2.b. Use of combination BP medication, statin, aspirin (as needed) in high CVD risk patients, including those with diabetes and CKD.</td>
<td>&gt;=80%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Standardized Treatment Protocol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.a. Standardized treatment protocol with specific medications and doses</td>
<td>Implemented</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3.b. Established protocol using FDC medication.</td>
<td>Implemented</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>4. Treatment intensification</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.a. Initiate pharmacological treatment immediately after the diagnosis of HTN is confirmed.</td>
<td>&gt;=70%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4.b. Medication must be added or intensified as per standard protocol if BP ≥ 140/90 or SBP ≥130 mmHg for high-risk patients.</td>
<td>&gt;=80%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Continuity of care and follow-up</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.a. Follow-up of elevated BP within 2-4 weeks if not controlled.</td>
<td>&gt;=80%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5.b. BP visit within six months for all patients with hypertension stable and well-controlled.</td>
<td>&gt;=80%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5.c. BP visit within 3 months for all patients with hypertension and high CVD risk, including diabetes and CKD.</td>
<td>&gt;=80%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Delivery System</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Team-based care and task-shifting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.a. BP measurement by NPHW appropriately trained and certified</td>
<td>&gt;=90%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6.b Follow-up BP visits with NPHW under supervision and guided by protocol.</td>
<td>&gt;=70%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6.c Medication titration by a NPHW under supervision and guided by protocol.</td>
<td>&gt;=70%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>7. Medication refill frequency</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.a Implement standard 3-month refill intervals for all BP medication prescriptions for patients stable and controlled</td>
<td>Three months refill</td>
<td>3 (2 month refill = 2; monthly refill = 1)</td>
<td></td>
</tr>
<tr>
<td><strong>System for performance evaluation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.a Implement monthly performance evaluation with feedback to facilitate tracking, prevent substantial deviations and promote timely program corrections. (Bi-monthly evaluation and feedback can be acceptable for small facilities, and evaluation every three months is the minimum acceptable).</td>
<td>Monthly feedback</td>
<td>3 (Bi-monthly = 2; every three months = 1)</td>
<td></td>
</tr>
</tbody>
</table>

FDC: fixed-dose combination; BPMD: blood pressure measuring device; CVD: cardiovascular disease; HTN: arterial hypertension; BP: blood pressure; SBP: systolic blood pressure.

For more information:
The scoring method covers the eight drivers and their 17 recommendations (see Table 3). The resulting score ranges from 1 to 21 and is organized into five levels (see Table 4). Level 1 reflects a low maturity index, while level 5 indicates a high maturity index.

**Table 4. HEARTS maturity index**

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;7</td>
<td>7-10</td>
<td>11-14</td>
<td>15-18</td>
<td>19-21</td>
</tr>
</tbody>
</table>

The levels demonstrate implementation from lowest level (1), incipient to highest level (5) mature.

Use the most robust available data to establish the baseline. Ensure the quality and accuracy of the information. The overall performance score is determined by the average of the three indicators. When implemented systematically and carefully, a correlation is anticipated between the maturity index (processes) and the performance index (outcomes) (see Table 5).

**Table 5. HEARTS performance index**

<table>
<thead>
<tr>
<th>Level of performance, goal, and scores</th>
<th>POOR (&lt;50%)</th>
<th>INCIPIENT (≥50%)</th>
<th>ON TRACK (≥60%)</th>
<th>HIGH (≥70%)</th>
<th>EXCELLENT (≥80%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coverage</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Control (&lt;140/90 mmHg) among all hypertensives treated</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Control (&lt;130 mmHg SBP) among all hypertensives-high CVD risk treated</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Note: HEARTS Performance Index: Poor: Below <0.8, Incipient: 0.9 – 1.6; On Track 1.7 – 2.4; High 2.5 – 3.2; Excellent 3.3 – 4.0

* Coverage: Proportion of people in the catchment area (clinical facility) who have been registered as hypertensive out of the best geographical unit in a specific period of time.

CVD: cardiovascular disease; SBP: systolic blood pressure.

For more information:

### 3.2 Step 2. Implementation

The quality plan will facilitate the definition of implementation actions, which will be carried out in line with the situation analysis and the initial assessment of maturity and performance indices.

<table>
<thead>
<tr>
<th><strong>DRIVERS FOR IMPROVING HYPERTENSION CONTROL</strong></th>
<th><strong>IMPLEMENTATION ACTIONS</strong></th>
<th><strong>MONITORING, DOCUMENTATION, AND EVALUATION</strong></th>
<th><strong>CAPACITY BUILDING PROGRAM</strong></th>
<th><strong>EFFECTIVE COMMUNICATION</strong></th>
<th><strong>RECOGNITION OF CHAMPIONS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>These are evidence-based interventions that have been successfully tested in various contexts and proven effective in practice. They have passed the concept text, and it is now time to implement them systematically and precisely to increase their chances of success and improve outcomes. Responsibilities can be rotating and limited in time.</td>
<td>Their <strong>success</strong> depends on: 1. Ease of implementation. 2. Team readiness to make the changes. 3. Acceptance by providers, patients, and the community.</td>
<td>Monitoring, documentation, and evaluation of implementation actions are essential elements in the process. The sustainability of any quality program depends directly on the systematization of these activities, as they provide the basis for continuous improvement and effectiveness over time.</td>
<td>Each implementation plan must be accompanied by a comprehensive capacity development program, ensuring the team’s proper preparation to take on the new responsibilities and roles assigned.</td>
<td>A successful implementation program must maintain timely, direct, and systematic communication with both the healthcare team and the community it serves. This ensures that everyone is informed about the changes, results based on maturity and performance indicators, enabling them to actively participate in the quality improvement program.</td>
<td>Recognize the champions of implementation at the healthcare center level, seeking every opportunity to highlight both the collective work of the entities and the individual achievements of those who have excelled in the process.</td>
</tr>
</tbody>
</table>
Effectiveness in the systematization and institutionalization of clinical management practices is closely linked to the system’s ability to systematically monitor and evaluate the program’s implementation.

**Objective**

To understand the program’s execution, analyze its performance – both successful and problematic aspects – and then identify the causes of deviations to determine modifications that drive improvements.

**Importance of Quality Data**

Success in implementing processes is linked to the availability of reliable data. The quality of information facilitates evaluation and the prompt adoption of corrective measures. Emphasis is placed on the preference for having a few high-quality and easily understandable data, along with the importance of sharing and socializing the information obtained periodically to strengthen collaboration and teamwork.

**Evaluation Frequency**

A prolonged evaluation cycle hinders the timely implementation of corrective measures within a program. Therefore, it is suggested to evaluate key quality indicators monthly to ensure more effective monitoring and the prompt application of any necessary adjustments.

**HEARTS Monitoring and Evaluation System**

The platform (see section 1.7) has been designed as a user-friendly interface, especially for primary health care centers. This system, based on the DHIS2 platform, integrates all HEARTS quality indicators in its process module. It also automates report generation, allowing health centers to efficiently identify deficiencies and best practices in clinical management.

**Utility of the HEARTS Dashboard**

The dashboard is intended to provide information systematically to all staff, offering a clear visualization of HEARTS maturity and performance indices. Its goal is to keep the team engaged and motivated, stimulating continuous improvement in practices and processes.
3.4 Step 4. Systematization of Changes

Systematization is a permanent change in the way work is done, and as such, it involves organizational transformation that can affect structural, documentary, or procedural aspects. This transformation process aims to establish new standards of care based on quality and sustain them over time as part of the daily work of the health center.

**ESTABLISHMENT OF IMPROVEMENT CYCLES**

It is suggested to implement improvement cycles with a limited duration, especially at the beginning of the program. A period of six months is considered appropriate as it allows maintaining momentum and making timely adjustments.

**PRECONDITIONS FOR SYSTEMATIZATION**

The effectiveness of the systematization of changes is directly linked to the quality of the preceding steps. It requires solid planning, faithful implementation of the initial conception, and, finally, a rigorous and objective evaluation and monitoring process.

**EVALUATION AND MONITORING**

In this phase, the health center’s quality committee is prepared to analyze the aspects that have been successful and those that can still be improved. It is equally crucial to identify elements that require a radical change, even when all guidelines and possibilities have been followed.

**CONTINUOUS IMPROVEMENT**

It is crucial to communicate changes in work execution, rules, and procedures. Additionally, to introduce the next cycle without interrupting existing activities: return to planning, refine or redesign actions, implement them, monitor and evaluate them. This cycle of improvement will be repeated over the next six months.

**ACKNOWLEDGMENTS AND COMMITMENTS**

Recognize champions, both individuals and groups, and motivate them to share their positive experiences. Furthermore, the leadership of the health center takes responsibility, reaffirms its commitment to change and continuous improvement, encourages employee participation and dedication, and involves the community. Successful practices are institutionalized, and a call is made to begin a new cycle of improvement.

Continuous improvement is an unceasing process of learning, change, and commitment that never concludes. It involves a constant aspiration to surpass oneself and set more ambitious goals.
Quality auditing is crucial to ensure the quality and efficiency of health care while contributing to the learning of the individuals involved in the health center and the community. Here are the fundamental elements.
Within the framework of HEARTS in the Americas, the quality improvement process is designed to be led, designed, implemented, and evaluated by the primary healthcare team itself, in collaboration with the community. This collaboration is presented as the cornerstone of the program’s success and sustainability.

Quality auditing, as a complementary mechanism, enhances the program’s effectiveness by verifying its alignment with predefined standards, providing healthcare providers and patients with information about areas of excellence and potential improvements.

Who conducts it?

In the context of implementing HEARTS in the Americas, quality auditing is primarily conceived as an external evaluation process. This external audit enables an impartial and objective assessment to verify the consistency between reported information and implemented actions.

Why is it done?

Quality auditing within the HEARTS framework validates program results and detects possible gaps not identified by the health center. Its central purpose is to reveal issues, seek solutions, and learn from best practices without assigning blame. It uses drivers to improve hypertension control, evaluating the program’s implementation at the national and subnational levels. This process contributes to redefining priorities, allocating resources in an informed manner, and reducing gaps in quality and equity.
Efficiency, agility, transparency, and high ethical standards are central requirements of the auditing process.

**Criteria for Selection of Health Centers**

In order to identify health centers for quality auditing, it is suggested to establish mechanisms for random selection stratified by extreme performance levels (both low and high), location (easily accessible urban, less accessible, and remote), economic and social vulnerability of the surrounding community, and other relevant characteristics of the local context.

**Audit Instruments**

Establish the audit instruments:
- Hypertension control drivers.
- Practice observation.
- Forms to assess program acceptance by employees and service users.

**Efficient Audit Execution**

To conduct an efficient audit, agile mechanisms should be established, minimizing interference in the health center. Sampling will be used for the selection of days and records, ensuring representativeness. The evaluation report, prepared on-site, will be immediately discussed with management, the quality group, employees, and the community, including proposals for solutions and an improvement program.

**Selection of Health Centers**

After the selection of health centers subject to the audit, it is crucial to establish and communicate the corresponding plan to all involved parties. An audit team with a deep understanding of the HEARTS model, knowledge of the local context, and strong technical skills should be formed. This team can include temporary staff, even from high-performing centers.

**Audit Focus**

To enhance effectiveness, it should focus on health centers with extreme performance, whether low or very high, and prioritize those in need of more support. The purpose is to understand their situation for providing personalized assistance.

**Recommendations**

Health center management and the quality committee should incorporate the audit recommendations into their quality plan.
The slowdown in the decline of mortality from cardiovascular diseases in the Region of the Americas, coupled with suboptimal levels of arterial hypertension control in the population, suggests that the current model of health services is exhausted, and a paradigm shift is urgently needed. In this context, the HEARTS in the Americas Initiative by the Pan American Health Organization (PAHO) emerges as a regional adaptation of the Global HEARTS strategy by the World Health Organization (WHO). HEARTS in the Americas is a multi-component initiative based on robust scientific evidence aimed at establishing a new care paradigm that positively impacts health indicators. It focuses on the comprehensive management of cardiovascular risk from primary health care under a continuous quality improvement approach, and its impact is directly related to the extent to which this health approach is fully scaled in primary care networks. The initiative’s implementation is led by health ministries with technical support from PAHO and is currently being implemented in 33 countries in the Region.