HEARTS

Improving hypertension control in 3 million people

Country experiences of programme development and implementation

World Health Organization
Improving hypertension control in 3 million people

Country experiences of programme development and implementation
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Hypertension – or elevated blood pressure – is a serious medical condition that significantly increases the risk of heart attack, stroke, kidney failure and blindness. It is the leading cause of premature death worldwide. Of the estimated 1.13 billion people who have hypertension, fewer than one in five has it under control. The main contributors to the high and rising prevalence of hypertension in low- and middle-income countries are unhealthy diets – especially excess sodium and also insufficient potassium – physical inactivity, and the consumption of alcohol.

To combat global mortality from noncommunicable diseases, at the Sixty-sixth World Health Assembly in 2013 Member States adopted resolution WHA66.10 and set global targets that include achieving a 25% relative reduction in the prevalence of raised blood pressure by 2025. The World Health Organization (WHO) is supporting countries to meet the global target and to reduce hypertension as part of WHO’s Thirteenth General Programme of Work (2019–2023), which focuses on measurable impacts on people’s health at the country level.

To support governments in strengthening the prevention and control of cardiovascular disease, WHO and the United States Centers for Disease Control and Prevention (CDC) launched the Global Hearts Initiative in September 2016, which includes the HEARTS technical package. In September 2017, WHO started a partnership with Resolve to Save Lives, an initiative of Vital Strategies, to support national governments to implement the Global Hearts Initiative. Other partners contributing to the global initiative are: the CDC Foundation, the Global Health Advocacy Incubator, the Johns Hopkins Bloomberg School of Public Health, the Pan American Health Organization (PAHO) and the US CDC. Over the past three years, there has been substantial progress demonstrated across low- and middle-income countries.

Hypertension control is a pathfinder for universal health coverage. This case series reports on country programmes that cover 3 million people, deliver protocol-based hypertension treatment through person-centred models of care, and provide state- and country-level information on improved hypertension control rates. These programmes demonstrate the feasibility and effectiveness of standardized hypertension control programmes. We hope that this case series will set a new standard for scalable public health hypertension control and broader primary care programmes and will be an impetus for the urgently needed advances in this field.

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Acknowledgements

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Overall coordination and writing of the document: Cherian Varghese and Baridalyne Nongkynrih led the development of the report, including the concept, structure, synthesis of information and writing. Gloria Giraldo and Pedro Orduñez led the work in the Pan American Health Organization and developed the content for countries. Nicola Toffelmire, Allison Goldstein, Taskeen Khan, Leanne Margaret Riley and Menno Van Hilten contributed to the development of the report. Bente Mikkelsen and Tom Frieden provided overall guidance.

Abbreviations

BP blood pressure
ARB angiotensin-receptor blocker
ACE angiotensin-converting enzyme
CCB calcium channel blocker
CPG clinical practice guideline
CVHO cardiovascular health officer
DoH department of health
DoPH department of public health
FDC fixed-dose combined
HTN hypertension
ICMR Indian Council of Medical Research
IHCI Indian Hypertension Control Initiative
MoH ministry of health
MoPH ministry of public health
NCD noncommunicable disease
PHC primary health care
RESOLVE Resolve to Save Lives
PAHO Pan American Health Organization
STS senior treatment supervisor
WHO World Health Organization

Photo credits

WHO gratefully acknowledges the use of the following photographs:
p.3: Antonella Rivoire; p.5: Marta A Rivas Ramirez; p.7: Territorial Bureau in Health, Valle del Cauca staff member; p.9: (left to right) Yusimi Alejo Padrón, PAHO; p.11: Romeris Diaz; p.13: Milo Montiel; p.15: WHO-Afro/Maheder; p.19: Gopi Sambandam, Kannur district, Kerala state; p.21: Narendra Salvi, Ratlam district, Madhya Pradesh state; p.23: Tejpal Sinh Chavan, CVHO, Sindhudurg district, Maharashtra state; p.25: Vijay Kumar, Gurdaspur district, Punjab state; p.27: Sran Reddy, Telangana state; p.29: PAHO/WHO Representation Mexico; p.31: (top to bottom) Obagha Chijioke Emmanuel, Muhammad Umar, Adeleye Rahmat Oluwatoyin; p.33: Jorge Victoria; p.35: Oscar Boggio, PAHO Peru; p.37: (top to bottom) Rauell John Santos, Richard Navarro, Richard Navarrosa; p.39: Gloria Giraldo, PAHO; p.40: Jittrapon Khaicome; p.41: Jittrapon Khaicome; p.43: Sangre Grande Enhanced Health Facility Staff; p.45: Nevin Cobaoglu and Zübeyde Özkan Altunay, MoH; p.47: Nguyen Thi Mien, Thanh Hung CHS.

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An estimated 1.13 billion people globally have hypertension, of whom two-thirds are living in low- and middle-income countries. The World Health Organization (WHO) Global Hearts Initiative supports governments to strengthen prevention and control of cardiovascular diseases (CVDs) with high-impact and evidence-based interventions through five technical packages. The MPOWER package focuses on tobacco control, the ACTIVE package on increasing physical activity, the SHAKE package on salt reduction, and the REPLACE package on elimination of industrially produced trans fats from the global food supply. On the management side, the HEARTS technical package is aimed at strengthening the management of CVDs in primary health care. Details of HEARTS modules and other resources are provided in Annex 1.

The WHO, Resolve to Save Lives (RESOLVE) – an initiative of Vital Strategies – and other partners are working with national and subnational governments to support their work to improve the control of hypertension (HTN) using the HEARTS technical package. The aim of the partnership is to prevent millions of deaths from CVD by reducing salt consumption, eliminating industrially produced trans fats, and controlling hypertension. One of the main strategies is implementing the HEARTS technical package, which provides proven, affordable and scalable solutions to improve control of hypertension at the primary care level. Five components are necessary for a successful hypertension control programme: drug- and dose-specific treatment protocols; access to quality-assured medications and blood pressure (BP) monitors; team-based care; patient-centred care delivered in the community, and information systems to enable quality improvement.

This case series aims to showcase the experience of 18 countries that have adopted the HEARTS technical package for scaling up hypertension control. Countries included are: Argentina, Chile, Colombia, Cuba, Dominican Republic, Ecuador, Ethiopia, India, Mexico, Nigeria, Peru, Philippines, Saint Lucia, Thailand, Trinidad and Tobago, Turkey and Vietnam. National and subnational ministries of health are developing and implementing programmes with the support of WHO and RESOLVE. In Latin America and the Caribbean, a programme led by the ministries of health and supported by Pan American Health Organization (PAHO) and other partners is active in 11 countries. HEARTS in the Americas has been supported technically and financially by the United States Centers for Disease Control and Prevention (CDC) and RESOLVE, along with the World Hypertension League, World Heart Federation, Inter-American Society of Cardiology, Latin-American Society of Hypertension, and several universities across the Americas.

Country case series

The country cases describe the development, implementation and status, as of June 2020, of the hypertension control programmes, based on the periodic reports and additional information provided by the focal person in each country. The information is presented using domains aligned to the elements of the HEARTS technical package.
• **Programme launch:** This section indicates the engagement of multiple partners, led by the national ministries of health, facilitated by WHO and RESOLVE. Engaging national institutions and professional agencies is important in terms of getting their buy-in and ensuring that all parties are on board. States within India became involved through a national-level process, described separately. In PAHO countries, the HEARTS programme builds on previously successful projects and programmes to optimize resources and establish the necessary synergies to make the initiative work.

• **Consensus protocol:** An evidence-based drug- and dose-specific protocol helps programme delivery and the procurement of medicines. A standard hypertension treatment protocol, developed though consensus workshops facilitated by the national (or subnational) ministries of health, academia, scientific societies, RESOLVE and the WHO is presented. The country cases indicates the availability of the protocol, and the full protocols for all countries are presented in Annex 2.

• **Service delivery:** This section presents the service delivery model adopted in each country: the level of health care where services are provided, the cadre of providers and their roles, and the type of health facility enrolling people on treatment.

• **Medicines and technology:** An uninterrupted supply of medicines and the availability of BP measuring devices are critical for the success of the programme. They are primarily provided by the national and subnational governments. The programme has raised demand above the routine level, and the section provides some indication of the additional quantities procured in some countries.

• **Capacity building:** This section presents the methods and approaches for human resource development for hypertension control in countries. This is an ongoing activity, and having a protocol and service delivery model helps focus on the competencies for delivering the programme. Some countries, such as India and Turkey, developed and implemented a training package suitable for multiple health workers (doctors, nurses, midwives, pharmacists), promoting multidisciplinary care.

• **Monitoring:** This section covers patient and programme monitoring, including the reporting systems in countries. Reporting systems are essential for monitoring the programme, including the outcome of treatment. It also includes the programme review by partners, and facilitatory field visits by WHO and RESOLVE.

• **Programme expansion:** In many countries there was an expansion of the programme involving an increase in the number of health facilities and geographical coverage. The HEARTS technical package in the Americas is expanding steadily and the projected numbers are presented in the PAHO Country cases.

• **Number of people enrolled:** The increasing number of people with hypertension enrolled from the inception of the programme up until the end of June 2020 is presented. Nigeria and Philippines have just started the programme, and hence the number of people is not yet listed. The number of people on treatment may be much higher in some countries, but for this report only the number enrolled from the programme inception up until June 2020 is included.

• **Hypertension control rate:** The indicator used is the 6-month control rate of hypertension, as given in the Systems for monitoring module of the HEARTS technical package. Six-month hypertension control rate indicates the proportion of people on treatment with controlled blood pressure (SBP <140 and DBP <90 mmHg) at six months from the initiation of treatment among all people put on treatment. Some countries have reported a 3–6-month control rate and others have used different time frames. Additional indicators, such as people lost to follow up and stock-out of medicines, are important but were not included in this first report.

**Enabling factors and challenges**

Preliminary observations of enabling factors and challenges are presented, based on the reports received. More formal evaluation and implementation research is underway in many countries and will add to the lessons learned.

Many factors emerged as prerequisites for a sustainable programme. Engagement of ministries of health, local government institutions and scientific communities was a critical step for ensuring the mandate and leadership. Availability of a consensus treatment protocol and effective monitoring systems were found to be essential. The support of partners and the availability of guidance through the HEARTS technical package facilitated the programme. Provision of catalytic funds helped to address critical gaps and to scale up the programme rapidly.

Primary health care capacity was a defining factor and varied widely between countries. While implementation has begun in all countries, speed of adaptation and scale up has varied, reflecting the readiness of countries’ primary health care systems. Ensuring the availability of drugs specified in the agreed protocol was a challenge, especially as programme growth resulted in a very high demand for medicines. Limitations in procurement systems for medicines and BP measuring devices was a major bottleneck. Hypertension and other noncommunicable diseases (NCDs) are often not part of the standard health information system indicator set in many countries. Six-month hypertension control rates can only be calculated from longitudinal follow up of individual patients, which ideally requires an electronic system or a well-managed paper-based system. This was not
the situation in most of the settings and has to be addressed as a priority. Availability of data at facility level also provides important feedback for health workers, thereby supporting improvement in the quality of clinical practice. Nevertheless, as these obstacles were overcome, valuable lessons were drawn from this short experience that will be useful as countries plan to scale up hypertension control.

Steady progress in enrolment and control rates was affected by the COVID-19 pandemic, but the situation also offered a means to bring innovations to the service delivery model. Countries have shown adaptation through telemedicine, prolonged supply of medicines and step-down care.

The way forward
This case series brings out the programmatic experience of protocol-based treatment of more than 3 million (3 129 002) persons from 18 countries around the world over a remarkably short period. The wide variety of countries represented indicates the feasibility of the programme in different settings. Health system changes were introduced, and focus was set on providing quality care, evidenced by the monitoring of hypertension control rates. Team-based care and patient-centred health services played a pivotal role in the successful implementation of the programme. Even more encouraging is the fact that after the initial implementation phase many countries are moving towards an expansion of services and an increase in the population coverage. The vision in the Americas is that by the year 2025, HEARTS will be the institutionalized model of care for cardiovascular risk management in primary health care, with special emphasis on the control of hypertension and secondary prevention.

With the COVID-19 pandemic, many countries have redirected their health priorities and resources towards a pandemic response, compromising access to and availability of primary care services, including services for hypertension and CVD management. This situation underscores the urgent need to adapt and strengthen primary care services for CVD management using the HEARTS technical package, as part of the current solution and into the post-pandemic reconstruction phase.

This is the first report of the programme, and continued support to the countries at this stage will be crucial until the programme stabilizes through government budgetary support and integration into the national health systems. Regular documentation and periodic reporting will help to disseminate the learnings and will help to scale up hypertension control programmes.
ARGENTINA

- April 2019: The national Ministry of Health (MoH) and the ministry of health of La Rioja province launched the programme, and Salta and Tierra del Fuego provinces followed suit.
- The Argentine Societies of Hypertension and Cardiology are engaged.
- Technical cooperation is provided by PAHO.
- The protocol was prepared by the MoH and agreed by all stakeholders within the framework of the National Commission for the Prevention of Cardiovascular Diseases. It is included in the National Plan for the Prevention and Control of Hypertension.
- Service delivery: In the community, screening is done during home visits by community health workers, who monitor and educate patients.
- Service delivery: In health centres, screening and detection are carried out by nurses and nursing assistants, and the diagnosis is made by physicians.
- Service delivery: Blood pressure (BP) measurement is repeated on the second visit by the nursing staff and, together with the doctor, they confirm the diagnosis and begin treatment.
- Service delivery: Nursing staff can also intensify the medication according to the protocol, with prior authorization from the doctor.
- Medicines are purchased centrally by the MoH through the Remediar programme.
- Medicines and technology: The inclusion of fixed-dose combination medicines has been proposed.
- Medicines and technology: The social security subsector applies discounts to pharmacy purchases in the case of hypertension medications (patients pay only 30% of the cost out of pocket).
- Medicines and technology: BP monitors used: validated automated sphygmomanometer (100%).
- July 2019: A national train-the-trainer workshop was held.
- PAHO Virtual Campus courses were provided for primary care teams: Implementation of the HEARTS technical package; Hypertension management; Secondary prevention of cardiovascular diseases.
- Capacity building: Patient data is entered directly into a health centre database, which then feeds into a provincial database.
- Oct 2018: Technical cooperation field visits were conducted by PAHO and international consultants.

Expansion of programme

Total number of health facilities

2019

2021 projected

Number of people enrolled

Total number of people on HTN management

Dec 2019

Hypertension control rate

6-month HTN control rate

April 2019

Dec 2019

Patient receiving medication.
The programme is led by the Ministry of Health (MoH), with the participation of the Faculty of Medicine, University of Chile, and Chilean scientific associations.

Technical assistance is provided by PAHO.

- **Nov 2016:** The programme was launched in two family health centres in Santiago.

Two protocols were developed by the MoH, with input from scientific societies and academia, based on:
- enalapril + amlodipine + hydrochlorothiazide
- losartan + amlodipine + hydrochlorothiazide


Screening and detection is carried out by physicians, nurses, and nursing assistants. Midwives detect women with hypertension during pregnancy checks and postpartum.

Diagnosis is done solely by physicians based on two visits after detection.

Nutritionists support patients in making changes to their diet – reducing sodium intake and, in the case of obese patients, total calories.

Purchase of medicines is through the Central Supply, a public body under the MoH.

- Amlodipine (5 mg and 10 mg) is now widely available.
- Blood pressure (BP) monitors used: aneroid sphygmomanometer (5%), non-validated automated (20%) and validated automated (75%).

- HEARTS train-the-trainer programme and virtual course are conducted for health personnel.
- PAHO Virtual Campus courses were provided for primary care teams: Implementation of the HEARTS technical package; Hypertension management; Secondary prevention of cardiovascular diseases.

Patient data is stored in an electronic clinical file. Data is extracted and an Excel file is created, which is sent to the municipal Department of Health, and on to the Primary Care Directorate of the Health Service and the MoH Department of Statistics.

- **Oct 2016, May 2017, Sept 2018:** Technical cooperation visits were conducted by the PAHO team and international PAHO consultants.
- PAHO office in Chile provides technical support. At the local level, the cardiovascular programme lead provides support to the programme.

### Programme Launch

<table>
<thead>
<tr>
<th>Expansion of programme</th>
<th>Total number of health facilities</th>
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<tbody>
<tr>
<td></td>
<td><strong>2</strong></td>
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<tr>
<td></td>
<td>Nov 2016</td>
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### Number of people enrolled

<table>
<thead>
<tr>
<th>Total number of people on HTN management</th>
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<tr>
<td><strong>185 759</strong></td>
</tr>
<tr>
<td>Dec 2019</td>
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### Hypertension control rate

<table>
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<tr>
<th>6-month HTN control rate</th>
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<tr>
<td><strong>Nov 2016</strong></td>
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<td><strong>Dec 2019</strong></td>
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Training activity on BP measurement technique.
The main actors in Colombia’s health system are the health insurer, its network of health care providers and the local territorial health authority. Technical cooperation is provided by PAHO.

Implementation of HEARTS started in two health centres in the city of Cali and expanded to 11 more primary care health centres.

May 2017: The launch of the PAHO CVD Risk Reduction through hypertension control and secondary prevention programme, which became HEARTS in the Americas.

Clinical guidelines on hypertension are used, with each health service designing programmes and interventions appropriate to its territory.

May 2017: An initial protocol was developed. Protocol consensus is an ongoing process. Protocol available at larger size in Annex 2.

The implementation of HEARTS has been conducted through the Health Care Integrated Routes (RIAs), specifically the Hypertension Integrated Route, which targets all people with cardiovascular and metabolic diseases or at risk of developing either disease.

Screening is carried out on those attending a primary care centre, and through home visits and community activities.

Screening is conducted by nurses and nursing assistants.

The diagnosis of hypertension is made by physicians.

Provision of medicines and technology is ensured through the health insurance mechanism. The system has a defined list of antihypertensive medications provided through the insurance schemes.

Fixed-dose combination antihypertensive medicines are not currently included in the national list of essential medicines.

The Ministry of Health does not recommend a specific blood pressure monitor, but those used must comply with safety requirements defined in Decree 4725 (2005).

Jun 2019: A HEARTS train-the-trainer programme was conducted.

PAHO Virtual Campus courses were provided for primary care teams: Implementation of the HEARTS technical package; Hypertension management; Secondary prevention of cardiovascular diseases.

Jun 2019: A HEARTS train-the-trainer programme was conducted.

PAHO Virtual Campus courses were provided for primary care teams: Implementation of the HEARTS technical package; Hypertension management; Secondary prevention of cardiovascular diseases.

The recording of data is done by the insurer, and the follow up should be conducted by the insurer.

Data is not currently available in real time; there may be a delay of up to a year. There is no electronic medical history in the country.

Mar 2017, Apr 2018: Technical cooperation field visits were made by the PAHO team and international PAHO consultants.
Central coordination was carried out by the National Technical Advisory Commission for Arterial Hypertension in the Ministry of Public Health (MoPH), including representatives from the departments of noncommunicable diseases, family medicine, hospitals, nursing, teaching, informatics, medicines and technologies, pharmacy, statistics and health promotion.

**Sept 2016**: The programme was launched in Matanzas province.

- **2017**: A standardized treatment protocol for use in primary health care was approved by the MoPH and the National Technical Advisory Committee and included in national guidelines.
- **2019**: Approval was given for the protocol to include fixed-dose combination (FDC) medicines.

- Six municipalities in different provinces were selected to initiate HEARTS.
- Community care is given by Basic Health Teams in close collaboration with secondary health care. Community pharmacies are actively involved. Diagnosis is done solely by physicians after three visits.
- Nationally produced generic antihypertensive medicines are available and distributed to all patients enrolled in the prioritized control card programme at a modest price or with an exemption from payment.
- The MoPH approved development of FDC medicines as a priority for the national pharmaceutical industry.
- Blood pressure monitors used: aneroid sphygmomanometer (5%), non-validated automated (80%) and validated automated (15%).

**July 2017**: Introduction and training workshops were held.

**July 2018**: National HEARTS train-the-trainer programme was run.

- The Hypertension Management Training Certificate is ongoing.
- Primary data is recorded manually by the Basic Health Teams. All information from participating centres is digitized.
- Implementation is overseen by a committee involving government and the academic sector.
- Medical care is supervised by the Vice-Ministry of Medical Assistance, with the participation of provincial, municipal and local medical assistance directorates.
- HEARTS indicators are reported to PAHO every six months.

**Feb 2017**, **Apr 2018**, **Dec 2019**: Technical cooperation field visits were conducted by the PAHO team and international PAHO consultants.

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**6-month HTN control rate**

<table>
<thead>
<tr>
<th>Baseline</th>
<th>June 2020</th>
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<tr>
<td>55%*</td>
<td>67%</td>
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*Population-based data

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**Cuba HEARTS was awarded the 2020 World Hypertension League Award.**

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**Community health promotion activity.**

**Nurse checking patient’s blood pressure.**

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**Protocol available at larger size in Annex 2.**
DOMINICAN REPUBLIC

- The HEARTS–Dominican Republic National Committee was formed from the Ministry of Public Health (MoPH), the National Health Service (SNS), and representatives of the regional health services, the Autonomous University of Santo Domingo and the National Health Insurance.
  - **Oct 2019**: The programme was launched.

- The consensus protocol was developed by the MoPH in conjunction with the SNS and the Dominican Society of Cardiology.
  

- Screening and detection is carried out by physicians, nurses, nursing assistants and community health workers.
- Diagnosis is done solely by physicians after three visits.

- Medicines and supplies are purchased and distributed on a regional basis by PROMESE/CAL using the SUGEMI management system.
- The intention is for hydrochlorothiazide (12.5 mg) and amlodipine (2.5 mg) to be included in the centralized procurement system.
- As of June 2020, 76% of the Dominican population is enrolled in the Family Health Insurance system.
- Blood pressure (BP) monitor used: validated automated sphygmomanometer (95%).

- The HEARTS train-the-trainer programme is carried out with health personnel.
- PAHO Virtual Campus courses were provided for primary care teams: Implementation of the HEARTS technical package; Hypertension management; Secondary prevention of cardiovascular diseases.

- Patient data is collected manually and entered into the digital National Health Information System with a unique identifier.
- WHO HEARTS indicators are reported to PAHO every six months.
  - **Feb 2019, Oct 2019**: Technical cooperation field visits were made by the PAHO team and international PAHO consultants.
  - A HEARTS data module has been created within the national health information system for the control of hypertension and diabetes.

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**Expansion of programme**

<table>
<thead>
<tr>
<th>Total number of health facilities</th>
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<tbody>
<tr>
<td>18</td>
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<tr>
<td>150 (2020)</td>
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<td>150 (2021 projected)</td>
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**Number of people enrolled**

<table>
<thead>
<tr>
<th>Total number of people on HTN management</th>
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<tr>
<td>5292 (June 2020)</td>
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**Hypertension control rate**

<table>
<thead>
<tr>
<th>6-month HTN control rate</th>
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<tr>
<td>Oct 2019</td>
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<tr>
<td>Apr 2020</td>
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<tr>
<td>16%</td>
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<tr>
<td>18%</td>
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Accurate blood pressure measurement technique with digital manometer, being carried out under the supervision of HEARTS coordinator.
ECUADOR

Programme launch

- The major stakeholders of the HEARTS initiative are the Ministry of Public Health (MoPH), Cardiology Society, Nephrology Society, Family Medicine Society, Municipality of Quito, Ecuadorian Institute of Social Security, PAHO Ecuador Country Office and PAHO Regional Office.

  - **Aug 2019**: The programme was launched nationally.

Consensus protocol

- Two workshops were held with experts in blood pressure (BP) management from the MoPH and scientific societies, supported by a regional PAHO consultant, in order to devise a standardized treatment protocol.


Service delivery

- Screening takes place during:
  - medical consultation
  - home visits
  - community activities.
  - Screening and detection is carried out by physicians, nurses, nursing assistants and primary care technicians.
  - Diagnosis is done solely by physicians after two visits.

Medicines and technology

- Purchasing is decentralized, following approval by the National Directorate of Medicines and Medical Devices.

  - Fixed-dose combination medicines have been submitted for approval by the national essential medications list (CNMB).
  - BP monitors used: aneroid sphygmomanometer (5%), non-validated automated (15%) and validated automated (80%).

Capacity building

- **Aug 2019**: 110 participants in HEARTS train-the-trainer workshop.

  - Total number of certificates issued (May 2020):
    - HEARTS Implementation virtual course: 35,225
    - Virtual course on hypertension management for primary care teams: 20,664
    - Virtual course on CVD secondary prevention: 3,448

Monitoring

- Patient data is entered directly into an Excel database at the health centre, zone and district levels; developments in the Health Care Registry Platform (PRAS) during 2020 enable the direct registration of hypertensive patients.

  - The PAHO country office health services focal point works closely with the MoPH.
  - WHO HEARTS indicators are reported to PAHO every six months through progress webinars.

  - **Oct 2018, Mar 2020**: Technical cooperation field visits were made by the PAHO team and international PAHO consultants.

### Expansion of programme

- **Total number of health facilities**
  - 2019: 30
  - 2021 projected: 92

- **Total number of people on HTN management**
  - May 2020: 7,719

- **6-month HTN control rate**
  - Aug 2019: 79%
  - May 2020: 79%

HEARTS train-the-trainer workshop, August 2019.
ETHIOPIA

Consensus protocol

- June 2018: The consensus protocol based on the HEARTS Technical package was approved.
- Three drugs are approved for use:
  - amlodipine, hydrochlorothiazide, lisinopril.

Service delivery

- People are enrolled in primary health centres.
- Health extension workers screen people in their homes and link those with suspected high blood pressure (BP) to PHC centres.
- Opportunistic screening is also conducted.
- Regular appointments and follow up are available at health centres.

Medicines and technology

- The programme started with a one-time procurement by RESOLVE of hypertension (HTN) medicines: 7 million tablets of amlodipine.
- The Ethiopian Pharmaceutical Supply Agency (EPSA) was engaged to provide medicines.
- 1200 digital BP monitors were provided by RESOLVE and distributed to health facilities and for use by health extension workers.

Expansion of programme

<table>
<thead>
<tr>
<th>Total number of health facilities</th>
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<tr>
<td>July 2019</td>
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<tr>
<td>July 2020</td>
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Number of people enrolled

<table>
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<tr>
<th>Total number of people on HTN management</th>
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<tbody>
<tr>
<td>Registration started</td>
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Hypertension control rate

<table>
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<tr>
<th>HTN control rate</th>
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<td>July 2020</td>
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- Project coordination mechanism is led jointly by the Ministry of Health (MoH) and WHO, with field implementation by RESOLVE.
- 20 July 2018: The programme was endorsed by His Excellency State Minister of Health Dr Kebede Worku.

31 July 2019: The programme was launched in 50 primary health care (PHC) sites and 40 school health sites, across 5 regions and 2 city administrations.

- June 2018: The consensus protocol based on the HEARTS Technical package was approved.
- Three drugs are approved for use:
  - amlodipine, hydrochlorothiazide, lisinopril.

Feb 2019: Training on protocols was carried out.

- July 2019: 8 regional coordinators were recruited.
- Feb 2020: HTN cascade training was provided to 243 trainees.

- Paper-based patient and facility-level data recording is in place in health facilities.
- Data compilation using mobile application has been approved by the MoH, and will facilitate data collection through a real-time link to the government DHIS-2 system.
- June 2020: The first supportive supervision by the MoH, WHO and RESOLVE was conducted.

“...The simplicity of the hypertension protocols will go with our task-shifting strategy and the Ministry would like the health system approach of HEARTS.”

Dr Kebede Worku
Former State Minister of Health, Ethiopia
To address the high burden of mortality due to noncommunicable diseases (NCDs), the Government of India (GoI) adopted the “25 by 25” goal, which aims to reduce premature mortality due to NCDs by 25% by 2025. One of the nine targets includes reducing the prevalence of raised blood pressure by 25% by 2025.

To achieve the GoI target, the India Hypertension Control Initiative (IHCI) was launched in November 2017 as a multi-partner initiative with the GOI, Ministry of Health and Family Welfare (MoHW), Indian Council of Medical Research (ICMR), state governments, WHO Country Office for India and RESOLVE (technical partner).

IHCI contributes to improved blood pressure control by strengthening hypertension (HTN) treatment and follow up as part of the National Programme for Prevention and Control of Cancer, Diabetes, CVD, and Stroke.

Programme Steering Group (PSG): Chaired by the GoI Secretary of Health, the PSG provides overall leadership, guidance, coordination and review of the IHCI implementation, and is comprised of heads of the partner institutions or their nominees.

Technical Advisory Group (TAG): Chaired by the Director General, ICMR and co-chaired by WHO Representative for India, the TAG is comprised of the project leads from the partner agencies or their nominees. It provides overall monitoring and supervision to ensure IHCI’s seamless implementation and scale up.

The ICMR, Director General of Health Services, MoHW and WHO Country Office for India provide assistance to the state governments at every stage of the programme.

ICMR and WHO provide support in terms of human resources, capacity building, programme design, monitoring and reporting, and research.

ICMR, WHO and RESOLVE jointly provide supportive supervision. The team is also engaged in development and deployment of the SIMPLE app for monitoring the programme and reporting outcomes such as HTN control rates.

IHCI started in 2018 in five states (Punjab, Kerala, Madhya Pradesh, Maharashtra and Telangana) and 25 districts. The major activities are:

- capacity building at state and district level through enhanced personnel support
- the training of health care providers
- support for development of HTN management protocols
- supervisory monitoring of implementation
- an uninterrupted medicine supply
- task sharing
- decentralization of services
- a strengthened information system to allow patient tracking and follow up on control of HTN and complications.
INDIA – Kerala

**Programme launch**
- Nov 2017: The state government worked with ICMR, WHO and RESOLVE to implement the India Hypertension Control Initiative (IHCI), led by the Ministry of Health, Government of India.
- Apr 2018: The IHCI was launched in four districts, later expanded to nine.

**Consensus protocol**
- Sept 2017: A consensus workshop was held to develop the hypertension (HTN) protocol.
  - The protocol followed was amlodipine, telmisartan, chlorthalidone, with dose increases.

**Service delivery**
- Patients are enrolled through noncommunicable disease (NCD) clinics, community health centres, primary health centres, and family health centres.
- Patient records are maintained manually through treatment cards and registers.

**Medicines and technology**
- Medicines and blood pressure (BP) monitors are procured through a centralized purchasing system: Kerala Medical Service Corporation Ltd.
  - Total medicines procured as of June 2020:
    - CCB: 74.0 million
    - ARB: 43.0 million
    - Diuretics: 3.3 million
  - No stock-out was reported from April 2019 to March 2020.
  - 64 BP monitors were provided and distributed.

**Capacity building**
- Cardiovascular health officers (CVHOs) and senior treatment supervisors (STSS) were recruited, and cascade training of health staff was carried out.
- Total number of staff trained by June 2020:
  - CVHOs: 4
  - STSS: 11
  - Nurses: 186
  - Medical officers: 206
  - Pharmacists: 136
  - Auxiliary nurse midwives: 618

**Monitoring**
- Monthly and quarterly reports are prepared and sent to the national level.
- On-site capacity building and supportive supervision is conducted by CVHOs, STSS and IHCI partners: WHO, ICMR.
- Four state-level review meetings have been conducted. District programme reviews are held monthly.

**Expansion of programme**
- Total number of health facilities
  - Jan 2018: 15
  - June 2020: 360

**Number of people enrolled**
- Total number of people on HTN management
  - July 2018: 203,527
  - Aug 2019: 284,246
  - June 2020: 360,153

**Hypertension control rate**
- 3–6-month HTN control rate
  - 2019 (Q2): 36%
  - 2019 (Q4): 38%

The NCD control programme had spread its roots in Kerala state by 2010, but after the introduction of the IHCI a structured evaluation materialized. The state now has more than 300,000 registrations under IHCI, and for the first time the control rates, default rates of the disease and drug forecasting can be estimated.

Dr Bipin Gopal, State NCD Nodal Officer, Kerala state

*Protocol available at larger size in Annex 2.*
**INDIA – Madhya Pradesh**

**Programme launch**
- **July 2017:** The state government worked with ICMR, WHO and RESOLVE to implement the India Hypertension Control Initiative (IHCI), led by the Ministry of Health, Government of India. **April 2018:** The IHCI was launched in three districts, later expanded to 15.

**Consensus protocol**
- **18 Sept 2017:** A consensus workshop was held to develop the HTN protocol.
- The protocol followed was amlodipine, telmisartan, chlorthalidone, with dose increases.


**Service delivery**
- Patients are enrolled through NCD clinics, primary health centres, and health and wellness centres (subcentres).
- Patient records are maintained manually through treatment cards and registers.

**Medicines and technology**
- Medicines and blood pressure (BP) monitors are procured through a centralized purchasing system: Madhya Pradesh Public Health Services Corporation (MPPHSC).
- Total medicines procured as of June 2020: CCB: 59.4 million ARB: 15.7 million diuretics: 2.5 million
- No stock-out was reported from April 2019 to March 2020.
- 54 BP monitors were provided and distributed.

**Capacity building**
- Cardiovascular health officers (CVHOs) and senior treatment supervisors (STTs) were recruited. Cascade training of health staff was carried out before implementation.
- Total number of staff trained by June 2020: CVHOs: 3 STTs: 11 medical officers: 339 nurses: 458 pharmacists: 253 auxiliary nurse midwives: 322 accredited social health activists: 1443

**Monitoring**
- Monthly and quarterly reports are prepared and sent to the national level.
- On-site capacity building and supportive supervision is conducted by CVHOs, STTs and IHCI partners: WHO, ICMR.
- Five state-level review meetings have been conducted. District programme reviews are held monthly.

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**Expansion of programme**
- **Total number of health facilities:** 117 Jan 2019 352 June 2020

**Number of people enrolled**
- **Total number of people on HTN management:** 7433 July 2018 42 209 Aug 2019 96 182 June 2020

**Hypertension control rate**
- 2019 (Q2): 29%
- 2019 (Q4): 33%

The WHO–IHCI team has been making unprecedented contributions to the identification, monitoring and close follow up of hypertension and diabetes patients in Madhya Pradesh state since April 2018. … IHCI consistently demonstrates commitment to reducing health disparities for hypertension and diabetes while adopting new approaches. NHM–MP offers heartfelt thanks to team WHO–IHCI.

Dr Saloni Sidana IAS, Additional MD NHM, Madhya Pradesh state
INDIA – Maharashtra

Jan 2018: The state government worked with ICMR, WHO and RESOLVE to implement the India Hypertension Control Initiative (IHCI), led by the Ministry of Health, Government of India.

Nov 2018: The IHCI was launched in four districts, later expanded to 11.

16 Mar 2018: A consensus protocol was approved.
- The protocol followed was amlodipine/telmisartan/chlorthalidone with dose increases.


- Patients are enrolled through noncommunicable disease (NCD) clinics, community health centres, primary health centers, and health and wellness centers (subcenters).
- Patient records are maintained in the SIMPLE app. Teleconsultation is also provided through the SIMPLE app.

- Medicines and blood pressure (BP) monitors are procured through a centralized purchasing system: Maharashtra e-Aushadhi through Haffkine’s Bio-Pharmaceutical Ltd.
- Start-up medicines for the initial three months was provided by RESOLVE. Later supplies were procured by the state government.
- Total number of medicines procured as of June 2020:
  - CCB: 39.6 million
  - ARB: 23.0 million
  - Diuretics: 1.8 million
- No stock-out was reported from April 2019 to March 2020.
- 95 BP monitors were provided and distributed.

- Cardiovascular health officers (CVHOs) and senior treatment supervisors (STSs) were recruited and trained.
- Total number of staff trained by June 2020:
  - CVHO: 5
  - STS: 11
  - Medical officers: 671
  - Nurses: 614
  - Pharmacists: 327
  - Supervisors: 540
  - Auxiliary nurse midwives: 2184

- Monthly and quarterly reports are prepared and sent to the national level.
- On-site capacity building and supportive supervision is conducted by CVHOs, STSs and IHCI partners: WHO, ICMR.
- Six state-level review meetings have been conducted. District programme reviews are held monthly.

The IHCI team has strengthened the national programme on NCDs in Maharashtra by using a digital mode of patient recording. This has led us to know the hypertension control status of nearly 25% of estimated hypertensive patients enrolled under IHCI in four districts. We are encouraged to expand the IHCI programme to other districts in our state.

Dr Sadhana M Tayade
Director Health Services,
Public Health Department,
Government of Maharashtra
INDIA – Punjab

**Programme launch**

- **July 2017**: The state government worked with ICMR, WHO and RESOLVE to implement the India Hypertension Control Initiative (IHCI), led by the Ministry of Health, Government of India.
- **Jan 2018**: The IHCI was launched in five districts, later expanded to 10.

**Consensus protocol**

- **8 Sept 2017**: The consensus protocol was approved.
  - The protocol followed was amlodipine/telmisartan/chlorthalidone, with dose increases.

**Service delivery**

- Patients are enrolled through community health centres, primary health centres, health and wellness centres (subcentres).
- Patient records are maintained in the SIMPLE app. Teleconsultation is also provided through the SIMPLE app.

**Medicines and technology**

- Medicines and blood pressure (BP) monitors are procured through a centralized purchasing system: e-Aushadhi/Punjab Health System Corporation (PHSC).
- Total medicines procured as of June 2020:
  - CCB: 49.7 million
  - ARB: 13.1 million
  - Diuretics: 2.1 million
- No stock-out was reported from April 2019 to March 2020.
- 79 BP monitors were provided and distributed.

**Capacity building**

- Cardiovascular health officers (CVHOs) and senior treatment supervisors (STSS) were recruited and trained.
- Total number of staff trained by June 2020:
  - CVHO: 4
  - STS: 8
  - Medical officers: 399
  - Pharmacists: 196
  - Supervisors: 265
  - Auxiliary nurse midwife: 1273
  - Community health officers: 343

**Monitoring**

- Monthly and quarterly reports are prepared and sent to the national level.
- On-site capacity building and supportive supervision is conducted by CVHOs, STSS & IHCI partners: WHO, ICMR.
- Five state-level review meetings have been conducted. District programme reviews are held monthly.

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**Expansion of programme**

**Total number of health facilities**

- Aug 2018: 144
- June 2020: 504

**Number of people enrolled**

- Apr 2018: 12,000
- Mar 2020: 97,606
- June 2020: 100,707

**Hypertension control rate**

- 3–6-month HTN control rate
  - 2019 (Q2): 20%
  - 2019 (Q4): 24%

IHCI project in the state of Punjab is doing excellent work. The project has developed a state-specific protocol for HT treatment, and a mobile-phone-based SIMPLE app enabling monitoring with real-time data.

Dr Sandeep Singh Gill
NCD Nodal, Punjab state

"Medical officer conducting BP measurement and retrieving the HTN follow-up patient details in the SIMPLE app."
INDIA – Telangana

**Programme launch**

- **July 2017**: The state government worked with ICMR, WHO and RESOLVE to implement the India Hypertension Control Initiative (IHCI), led by the Ministry of Health, Government of India.
- **Nov 2018**: The IHCI was launched in 10 districts, later expanded to 20.

**Consensus protocol**

- **23 Sept 2017**: The consensus protocol was approved.
  - The protocol followed was amlodipine/telmisartan/chlorthalidone, with dose increases.


**Service delivery**

- Patients are enrolled through general hospitals, community health centres, primary health centres, and health and wellness centres (subcentres).
- Patient records are maintained manually through treatment cards and registers.
- Medicine distribution and follow up is decentralized to subcentres.

**Medicines and technology**

- Medicines and blood pressure (BP) monitors are procured through a centralized purchasing system: Telangana State Medical Supplies & Infrastructure Development Corp.
  - Total medicines procured as of June 2020:
    - **CCB**: 38.4 million
    - **ARB**: 10.1 million
    - **diuretics**: 1.6 million
  - No stock-out was reported in April 2019 to March 2020.
  - **100** BP monitors were provided and distributed.

**Capacity building**

- Cardiovascular health officers (CVHOs) and senior treatment supervisors (STSs) were recruited, and cascade training for health staff was carried out.
  - Total number of staff trained by June 2020:
    - **CVHO**: 4
    - **STS**: 16
    - **medical officers**: 285
    - **nurses**: 188
    - **pharmacists**: 167
    - **auxiliary nurse midwives**: 1443

**Monitoring**

- Monthly and quarterly reports are prepared and sent to the national level.
- On-site capacity building and supportive supervision is conducted by CVHOs, STSs and IHCI partners: WHO, ICMR.
- Eight state-level review meetings have been conducted. District programme reviews are held monthly.

**Expansion of programme**

**Total number of health facilities**

- **Jan 2019**: 185
- **June 2020**: 202

**Number of people enrolled**

**Total number of people on HTN management**

- Registration started:
  - **Nov 2018**: 17,300
  - **Dec 2018**: 58,595
  - **July 2019**: 96,545
- **Jan 2019**: 185
- **June 2020**: 202

**Hypertension control rate**

- **2019 (Q2)**: 57%
- **2019 (Q4)**: 63%

WHO–IHCI technically supported and strengthened the service delivery by introducing standardized treatment protocols, indenting of medicines and equitable distribution mechanisms, making services more patient-centric with the introduction of decentralization. Recording and reporting has been improved with the introduction of treatment cards and registers. Due to the collective efforts of team IHCI and the state government, the follow-up rates of patients have increased.

Dr G Srinivasa Rao
Director of Public Health & Family Welfare, Telangana state

Patient having blood pressure measured in a clinic.
**MEXICO**

- The programme stakeholders were led by the National Center for Preventive Programs and Disease Control (CENAPRECE) of the Federal Secretary of Health, state secretaries of health of the Chiapas and Sonora states, National Institute of Cardiology and Experts in Arterial Hypertension.
  - **Feb 2020**: The programme was launched.

- A protocol development exercise was held in Mexico City with technical assistance from PAHO.

- An acceptable protocol for Chiapas and Sonora was agreed by the state teams, the CENAPRECE Health Programme for Adults and the Elderly, PAHO and international experts.


- Screening and detection take place through:
  - medical consultation
  - community activities.

- Purchase of medicines is centralized under the Institute of Health for Welfare.
  - **Mar 2020**: The 13th update of the catalogue of medicines was published in the Federation Official Gazette by the General Health Council, and included 16 new hypertension medicines.

- Types of BP monitors used are: aneroid sphygmomanometer (92%), non-validated automated (5%), mercury (3%).

- 893 health professionals have received the certificate from the PAHO–HEARTS implementation virtual course.
  - **Feb 2020**: A national train-the-trainer workshop was held.

- The data of patients with NCDs who come to the health centres is entered in the Registration and Control Card for Chronic Diseases.

- The patient national information system provides a unique identifier that enables the collection of data at both health unit and jurisdictional levels for the centralized information system.
  - **Feb 2020**: Technical cooperation field visits were made by the PAHO team and international PAHO consultants.

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**Expansion of programme**

<table>
<thead>
<tr>
<th>Year</th>
<th>Facilities</th>
<th>People on HTN management</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>20</td>
<td>3606</td>
</tr>
<tr>
<td>2021</td>
<td>28 projected</td>
<td></td>
</tr>
</tbody>
</table>

**Number of people enrolled**

**Total number of health facilities**

**3-month HTN control rate**

- **Feb 2020**: 46%
- **July 2020**: 43%*  

*Implementation started in March 2020. Service provision was severely affected by the pandemic.

Launch of national HEARTS programme by MoH in Mexico City.
Feb 2018: Preparatory work and development of the proposal was started by the Federal Ministry of Health (FMoH) and WHO Country Office for Nigeria.

Jan 2019: The proposal was approved.

Aug 2019: The National Hypertension Control Initiative was launched.

Dec 2019: An advocacy visit was made to Ogun state.

Jan 2020: An advocacy visit was made to Kano state.

Sept 2020: Inauguration of state steering committees was scheduled.

Aug 2019: A consensus conference was held and the hypertension (HTN) protocol was approved.


24 Health facilities were identified in both states.

June 2020: A one-day training and a baseline assessment were conducted in selected facilities.

Sept 2020: The launch and service delivery was scheduled to commence in Kano and Ogun states.

2.1 million medicines are under procurement through RESOLVE:
- amlodipine, hydrochlorothiazide, losartan, telmisartan, lisinopril.
- 500 blood pressure monitors procured, with 100 supplementary cuffs.

June 2020: Three staff were hired at national and state levels.

July 2020: National training of trainers was conducted.

July 2020: A national steering committee was inaugurated by the Permanent Secretary, FMoH.

Sept 2020: Step-down trainings were scheduled in Kano and Ogun states.

I believe this initiative will strengthen the primary healthcare system to better cater for the growing health needs of residents in Kano and Ogun states.

Permanent Secretary, FMoH, during inauguration of the National Steering Committee.
The main stakeholders are convened and led by the Ministry of Health and Panama’s Social Security Fund and include public hospitals Santo Tomas and Metropolitan Complex Dr Arnulfo Arias Madrid, Panamanian Society of Cardiology, and the University of Panama. Technical cooperation was provided by PAHO.

**Nov 2018:** The programme was launched.

**June 2019:** Consensus meetings were held, led by the MoH with the participation of the Panamanian Society of Cardiology.
**24 June 2019:** The General Directorate of Health adopted the protocol through Ministerial Resolution Number 490.


Screening is carried out at primary care centres on patients and their supporters, and through home visits or community activities. Screening is also carried out through a national health census.

Screening is conducted by nurses, nursing assistants, pharmacists, community health workers and other allied health workers.

Physicians diagnose hypertension after two visits.

Medicines are mostly purchased at national level, but health regions and facilities are also able to purchase medicines. After the adoption of the HEARTS technical package, two changes were introduced:

- Acquisition of medicines is based on the HEARTS standardized treatment protocol.
- The quantity of medicines purchased is based on the estimated number of hypertensive patients to be expected.
- Fixed-dose antihypertensive medicines are being included in the national drug formulary or the national list of essential medicines.
- Blood pressure (BP) monitor used: aneroid sphygmomanometer (30%); validated automated (70%).

**July 2019:** The HEARTS train-the-trainer programme was conducted for MoH personnel, and similar programmes were held in at least five regions.

- PAHO Virtual Campus courses were provided for primary care teams.
- Patient data is recorded manually, entered into a health centre database and then into a national health information system.

**Nov 2018, 2019:** Field visits were made by the PAHO team and international PAHO consultants.

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**Expansion of programme**

**Total number of health facilities**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>37</td>
</tr>
<tr>
<td>2021</td>
<td>40</td>
</tr>
</tbody>
</table>

**Number of people enrolled**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total number of people enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 2020</td>
<td>52,872</td>
</tr>
</tbody>
</table>

**Hypertension control rate**

<table>
<thead>
<tr>
<th>Year</th>
<th>6-month HTN control rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 2019</td>
<td><em>provisional data</em></td>
</tr>
<tr>
<td>Mar 2020</td>
<td>77%*</td>
</tr>
</tbody>
</table>

Building the standardized treatment protocol.
PERU

- Stakeholders are convened and led by the Ministry of Health (MoH) and include Universidad Nacional Mayor de San Marcos, Peruvian Cardiology Association, Peruvian Hypertension Association and Pan American Health Organization (PAHO).

  - Sept 2019: The programme was launched.

- A consensus protocol process was led by the MoH and developed with the Peruvian Cardiology Association, Peruvian Hypertension Association, Peruvian Family and Community Medicine Association, Peruvian Neurology Association, in addition to the Directorate of Medicines, Supplies and Drugs and the National Center for Supply of Strategic Health Resources.

  - Protocol available at larger size in Annex 2.

- Screening and detection take place through:
  - medical consultation
  - home visits
  - community activities.

- Blood pressure (BP) screening is performed on everyone who comes to primary health care facilities, as specified in the Clinical Practice Guideline for Diagnosis, Treatment and Control of Hypertensive Disease, Ministerial Resolution 0312015/MINSA.

- Diagnosis is done solely by physicians, with two visits needed for confirmation.

- Medicines are procured through both national and regional systems.

- Fixed-dose combined medicines are being incorporated into the National Medicines Petition List (PNUME).

- Types of BP monitors used: validated and non-validated automated sphygmomanometers.

- The HEARTS train-the-trainer programme was provided by the MoH.

  - PAHO Virtual Campus courses were provided for primary care teams: Implementation of the HEARTS technical package; Hypertension management; Secondary prevention of cardiovascular diseases.

- Data is recorded manually and entered using a unique identifier into a national electronic information system.

- The programme is supported by the MoH. PAHO provides technical assistance.

Monitoring

- Expansion of programme

  - Total number of health facilities

    | Year | Number |
    |------|--------|
    | 2020 | 34     |
    | 2021 projected | 44  |

- Number of people enrolled

  - Total number of people on HTN management

    | Year | Number |
    |------|--------|
    | Mar 2020 | 7655 |

- 6-month HTN control rate

<table>
<thead>
<tr>
<th>Month</th>
<th>Control Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct 2019</td>
<td>74%</td>
</tr>
<tr>
<td>Mar 2020</td>
<td>73%</td>
</tr>
</tbody>
</table>

This initiative will mean essential support for the country’s public health. CVDs are increasing, not only in adults but also in children; for this reason, we seek to prevent ... damage before [having to] provide treatment.

Zulema Tomás Gonzáles
Minister of Health, Peru
**PHILIPPINES**

- **Nov 2018**: Initial coordination meetings were held between the Department of Health (DoH), Food and Nutrition Research Institute, Imagine Law and Global Health Advocacy Incubators.
- **June 2019**: The programme was launched by DoH partners, local health personnel and officials of the Philippine Society of Hypertension (PSH).

**Consensus protocol**
- The Philippine Hypertension Guideline was developed by the PSH in 2012, based on clinical practice guidelines.
- An algorithm with step-up care approach with monotherapy as first-line treatment was developed with DoH and PSH.

**Protocol available at larger size in Annex 2.**

- **Jan 2020**: Coordination activities started in three regions: Region II – Cagayan Valley, Region VI – Western Visayas, Region XI – Davao Region.
- **Mar 2020**: An electronic patient registry (Eregistry) was developed and pre-tested in Excel format using macros.
- **Aug 2020**: The roll-out of the patient registry in Central Visayas was planned.

- **Nov 2019 – Feb 2020**: Discussions were held with the Philippine Health Insurance Corporation on provision of antihypertensive drugs in the primary care benefit (PCB) package. Drugs are included in the expanded PCB (ePCB) package.
- **May 2020**: Blood pressure monitors were procured.

- **Oct 2018 onwards**: Nine personnel were hired.
- **Nov 2019 – Mar 2020**: Train-the-trainer sessions were conducted in each region.
- **Feb – Mar 2020**: Nine cascade trainings were conducted.
  - A total of 513 personnel were trained, including regional NCD team members, the Provincial DoH Representative and technical staff.

- **Feb 2020**: Strategic planning was conducted with DoH, during which strategies, activities, timelines and targets were aligned.
- **A project monitoring framework was subsequently developed.**
  - Electronic reporting forms will consolidate data from Eregistry (municipal to national level) and be used to develop programme indicators.

**Medicines and technology**

**Service delivery**

**Capacity building**

**Monitoring**

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**The Healthy Hearts Project has capacitated our Barangay Health Workers to take part in the fight to control hypertension. It is our BHWs who are currently sacrificing their safety and health to ensure that persons with hypertension are given appropriate services amidst the COVID-19 pandemic.**

John Richard L. Lapascua, RN, Senior Health Program Officer, DoH, Western Visayas Center for Health Development
SAINT LUCIA

○ The main stakeholders are led by the Ministry of Health Department of Health and Wellness through steering and technical committees. Other agencies engaged include St Lucia Diabetes & Hypertension Association and Caribbean College of Family Physicians (St Lucia Chapter).
  ● Jan 2020: The programme was launched.

○ Oct 2019: A consensus protocol was developed with the participation of all stakeholders and was approved by the Department of Health and Wellness.


○ Screening and detection mostly take place at primary care health centres, carried out by nurses, nursing assistants, and community health aids.
  ○ Health screening is also performed by nursing staff in workplaces and at (monthly) health fairs.
  ○ Diagnosis of hypertension (HTN) is done solely by physicians. Two visits are needed for confirmation of diagnosis.
  ○ The private sector has been involved from the outset. Both cardiologists on the island are employed by the private sector.

○ Medicines are ordered centrally, mostly from OES Pharmaceutical Procurement Services.
  ○ A fixed-dose combination of CCB with telmisartan (preferred ARB) is now available.
  ○ Blood pressure (BP) monitors used: validated automated sphygmomanometer (100%).

○ Oct 2019: A HEARTS train-the-trainer programme was conducted for MoH personnel.
  ○ A PAHO Virtual Campus course on the implementation of the HEARTS technical package was provided for primary care teams.

○ Oct 2019: Technical cooperation field visits were made by the PAHO team and international PAHO consultants.

○ Records are taken manually and later entered with a unique identifier into a national electronic database.
  ○ All centres use electronic health records. Work is ongoing to improve the monitoring and evaluation process by generating monthly reports for the facility staff and HEARTS coordinators.
  ○ The programme is supported by the Permanent Secretary, Chief Medical Officer, Senior Medical Officer/NCD Focal Point, and the Principal Nursing Officer.
  ● Oct 2019: Technical cooperation field visits were made by the PAHO team and international PAHO consultants.
Medicines

- Patients are given a three-month medicine supply in blister packs.

- Feb 2020: An application was submitted for fixed-dose combined pills for HTN treatment to the Subcommittee for Development of National List of Essential Medicine.

Technology

- Electronic health records are maintained.
- Every person treated is given a unique patient ID number.

Treatment protocol

- June 2020: A simplified treatment protocol was developed for piloting in Lampang province.

Service delivery

- Blood pressure is measured for all outpatients at every visit.
- Care is decentralized and given close to the community.
- Team-based care is provided, with nurses as clinic managers.

Scale of treatment

- 2018–20: The number of people on HTN treatment increased substantially.
- Jan 2018–June 2020: 1.7 million people were enrolled on HTN treatment.
- Aug 2020: 59% of people on treatment had hypertension controlled as of last visit.

- More information is available in: Hypertension care in Thailand: best practices and challenges, 2019

Hypertension affects one out of every four Thai adults. Thailand’s strong primary health care system is continuously striving to improve access to screening, treatment and control of hypertension.

Dr Suwannachai Wattanayingshanoenchai
Director-General of Department of Disease Control,
Ministry of Public Health, Thailand
The NCD Oversight Subcommittee is chaired by the Advisor for Health Promotion and Public Health of the Ministry of Health (MoH) and includes the regional health authorities, University of the West Indies, PAHO and the TT NCD Alliance.

- **Aug 2019**: The programme was launched.

- **Nov 2018**: Participants drafted a treatment protocol during a Master Trainers course run by the PAHO team. The HEARTS Oversight Subcommittee further developed the draft protocol, based on guidance from the HEARTS Evidence-based treatment protocols technical module. A national consultation was held with representatives from the public and private sectors and a final protocol was approved by the MoH.


- **Everyone presenting at a health centre has their blood pressure (BP) measured as part of baseline screening.**
- **Additional screening is conducted through community outreaches, workplace, and staff health screening programmes.**
- **Diagnosis is generally made with two readings at least 6 hours apart, although diagnosis can be made on the first visit, depending on the degree of elevation and the symptoms. Follow up is done one month after initiating treatment.**
- **The manual method of recording data is most common, but HEARTS sites have begun implementing Excel-based electronic registries. All data is subsequently entered in a national electronic database using a unique identifier.**

- **Procurement is centralized.**
- **BP monitors used: non-validated automated sphygmomanometer (16%); validated automated (30%); no information (54%).**

- **HEARTS Implementation virtual course: 103 enrolled, 27 obtained certificates.**
- **Nov 2018**: Master Trainers course held.
- **July 2019**: National train-the-trainer programme: 105 participants

- **July 2017, Nov 2018, July 2019**: Technical cooperation field visits made by PAHO team and international PAHO consultants.
The Ministry of Health established a national steering group.

Jan 2018: Preparatory work started. Three provinces (Çankırı; Erzincan; Uşak) were selected from east, central, and west Turkey.

May 2018: The programme was launched.

February 2019: 12-month implementation began.

A national protocol was developed, adapted from the HEARTS protocol but based on national clinical practice guidelines (CPG) already established.

Sept 2019: The protocol was reviewed at a national consensus meeting supported by WHO and RESOLVE.

Coverage of programme

Total health facilities included

<table>
<thead>
<tr>
<th>Province</th>
<th>Number of facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Çankırı</td>
<td>59</td>
</tr>
<tr>
<td>Erzincan</td>
<td>74</td>
</tr>
<tr>
<td>Uşak</td>
<td>121</td>
</tr>
</tbody>
</table>

Number of people enrolled

Total number of people on HTN management

<table>
<thead>
<tr>
<th>Province</th>
<th>Number of people enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Çankırı</td>
<td>22</td>
</tr>
<tr>
<td>Erzincan</td>
<td>28</td>
</tr>
<tr>
<td>Uşak</td>
<td>35</td>
</tr>
</tbody>
</table>

12-month HTN control rate among people on treatment

Feb 2019 (start of implementation period) 46%

Feb 2020 (end of implementation period) 59%

It has been observed that the interventions implemented within the framework of the project are effective and will be more effective provided that additional measures are taken to increase the recording of blood pressure.

Dr Banu Ekinci
Head of Department of Chronic Disease and Elderly Health, General Directorate of Public Health, Ministry of Health

VIET NAM

- **Apr 2018**: A meeting was held in Viet Nam of RESOLVE, WHO, the Viet Nam Ministry of Health (MoH), the National Heart Institute and National Institute for Nutrition. The programme was launched in 27 provinces.

- **July 2018**: The programme was launched in 27 provinces.

- **Aug 2018**: An interim protocol was developed.

- **Dec 2019**: A national protocol was adopted, with CCB as first-line drug.

Service delivery

- Screening for hypertension and management of hypertension (HTN) is carried out in commune health stations.

Medicines and technology

- Medicines are procured at provincial level.
- Medicines used: CCB; ACE inhibitor/ARB; thiazide-like diuretic.
- More than 2200 digital blood pressure monitors were procured and distributed to the commune health stations.

Capacity building

- Training materials were developed with local adaptations.
- A total of 2067 health care workers, from central to village level, were trained over two years.

Monitoring

- The National Institute of Hygiene and Epidemiology was selected as lead agency for the national monitoring system.

- **Oct 2018**: An Excel format for reporting on HTN management at commune, district and province levels was introduced. Monthly reports are submitted and monitoring visits carried out regularly.

- **Apr 2019**: A mid-term review was carried out by RESOLVE.

- **Jan 2020**: National electronic registration and a new format for monthly online reporting were introduced.

Expansion of programme

Total health facilities included

- July 2018: 600
- Dec 2020 (projected): 2200

Number of people enrolled

- Dec 2018: 12,396
- Jul 2019: 54,303
- Sept 2019: 64,147
- Oct 2019: 70,586
- Dec 2019: 70,586

Hypertension control rate

- 2015: Baseline population HTN control: 39.5%
- June 2020: HTN control rate among people on treatment: 78.8%

---

**Diagnosis and treatment of NCDs in CHSs should be changed from examination and prescription for five to seven days per visit to long-term management, starting with hypertension.**

Dr Do Xuan Tuyen, Vice Minister of Health
Global Hearts Initiative, working together to promote cardiovascular health [website](https://www.who.int/cardiovascular_diseases/global-hearts/en/).

HEARTS technical package [website](https://www.who.int/cardiovascular_diseases/hearts/en/).


Resolve to Save Lives [website](https://resolvetosavelives.org/cardiovascular-health/hypertension).

Fundamentals for implementing a hypertension program in resource-constrained settings [website](https://globalhypertensionathopkins.org/courses).

Annex 2

Hypertension treatment protocols
**Argentina**

**Plan Nacional de Prevención y Control de la Hipertensión Arterial**

**HEARTS en Argentina**

**Protocolo de tratamiento**

**Presión arterial ≥ 140/90 mmHg confirmada en 2 visitas, iniciar tratamiento con Almodipina 5 mg en una toma diaria**

1 mes

**Presión arterial ≥ 140/90 mmHg:**

- Almodipina 5 mg
- Losartán 50 mg en una toma diaria

1 mes

**Presión arterial ≥ 140/90 mmHg:**

- Almodipina 5 mg + Losartán 100 mg en una toma diaria

1 mes

**Presión arterial ≥ 140/90 mmHg:**

- Amlodipina 10 mg + Losartán 100 mg + Hidroclorotiazida 25 mg en una toma diaria

Consultar en el hospital

**Excepciones**

- Potencial embarazo o mujeres embarazadas
- Personas de 80 años o más
- Personas menores de 15 años
- Indicaciones perentorias (IAM, IC)
- ERC etapa 4 y 5
- Insuficiencia hepática grave
- Alergias conocidas a algunos de los componentes

**Metas de PA**

- < 140/90 mmHg en < de 80 años
- < 130/80 mmHg en personas con albuminuria moderada o severa (RAC ≥ 30 mg/g)

**Abreviaturas:**

- PA: presión arterial
- RAC: razón albumina/creatinina en orina
- IAM: infarto agudo al miocardio
- IC: insuficiencia cardiaca
- ERC: enfermedad renal crónica
- PAS: presión arterial sistólica
- PAD: presión arterial diastólica

**Chile**

**PROTOCOLO TRATAMIENTO DE LA HIPERTENSIÓN PARA PERSONAS DE 20 AÑOS Y MÁS:**

**ENALAPRIL – AMLODIPINO– HIDROCLOROTIAZIDA**

**DIAGNÓSTICO DE HIPERTENSIÓN**

- Si PAS ≥ 140 mm Hg o PAD ≥ 90 mm Hg iniciar dos medicamentos en dosis bajas
  - Enalapril 10 mg/día
  - Amlodipino 5 mg/día (PM)
  - Medidas no Farmacológicas

**PASO 1**

**Después de 4 semanas**

- Enalapril 10 mg c/2 hrs
- Amlodipino 10 mg/día (PM)
- Medidas no Farmacológicas

**PASO 2**

**Después de 4 semanas**

- Enalapril 20 mg c/2 hrs
- Amlodipino 10 mg/día (PM)
- Hidroclorotiazida 25 mg/día (AM)
- Medidas no Farmacológicas

**PASO 3**

**Después de 4 semanas**

- Enalapril 20 mg c/2 hrs
- Amlodipino 10 mg/día (PM)
- Hidroclorotiazida 50 mg/día (AM)
- Medidas no Farmacológicas

**PASO 4**

**Después de 4 semanas**

- Enalapril 20 mg c/2 hrs
- Amlodipino 10 mg/día (PM)
- Hidroclorotiazida 50 mg/día (AM)
- Medidas no Farmacológicas

**Excepciones**

- Personas de 80 años o más
- Personas menores de 15 años
- Indicaciones perentorias (IAM, IC)
- ERC etapa 4 y 5
- Insuficiencia renal grave
- Alergias conocidas a algunos de los componentes

**Nota:**

- PAS: presión arterial sistólica
- PAD: presión arterial diastólica
- IAM: infarto agudo al miocardio
- IC: insuficiencia cardiaca
- ERC: enfermedad renal crónica
- RAC: razón albumina/creatinina
- AM: administración matutina
- PM: administración nocturna

**Plan Nacional de Prevención y Control de la Hipertensión Arterial**

**HEARTS en Argentina**

**Protocolo de tratamiento**

- Presión arterial ≥ 140/90 mmHg confirmada en 2 visitas, iniciar tratamiento con Almodipina 5 mg en una toma diaria

1 mes

- No fumar y limitar el consumo de alcohol
- Reducir el consumo de sal y alimentos procesados
- Incrementar el consumo de frutas y verduras

**Consultar en el hospital**

- Realizar actividad física regularmente
- Adoptar hábitos para combatir el estrés

1 mes
Ajustes de antihipertensivos en pacientes sin indicaciones específicas para un tipo especial de medicamento

**REQUISITOS**
- No está en embarazo o con probabilidad de estar en embarazo
- Ajustes de medicamentos cada 4 semanas
- TFGe > 30ml/min CG y Potasio entre 3.5-4.5 mmol/l

Losartan/hidroclorotiazida tab x 50 mg/12.5 mg:
- Media tableta en la mañana

Losartan/hidroclorotiazida tab x 50 mg/12.5 mg:
- 1 tableta en la mañana. Si no hay control en 4 semanas, pasar a Losartan/hidroclorotiazida tab x 100 mg/25 mg: 1 tableta en la mañana.

- Si dispone de la tableta combinada de enalapril/hidroclorotiazida, puede iniciar con ésta combinación en lugar de Losartan/hidroclorotiazida.
- Si no dispone de la tableta combinada de Losartan/hidroclorotiazida, puede usar el mismo esquema con las tabletas de cada medicamento.

Controle creatinina y potasio cada 1-3 meses mientras hace los ajustes (juego de acuerdo a la función renal)

Sin control a las 4 semanas (evalúe adherencia, HTA resistente)

Si TFGe>60 ml/min CG y potasio <4.5 mmol/l INICIO:
Espironolactona tab x 25 mg media tableta en la mañana, luego 1 tableta en la mañana.
(Controle creatinina y potasio cada 1-3 meses mientras hace los ajustes, luego de acuerdo a la función renal).

Si frecuencia>60 ml/min sin bloqueo AV en electrocardiograma:
Metoprolol tartrato tab x 50 mg media tableta 2 veces al día, hasta metoprolol tartrato tab x 100 mg 1 tableta 2 veces al día (mantenga FC>55/min).

**BASADO EN**
- An Effective Approach to High Blood Pressure Control: A Science Advisory From the American Heart Association, the American College of Cardiology, and the Centers for Disease Control and Prevention. Hypertension. Published online November 15, 2013. Disponible en: http://hyper.ahajournals.org/content/early/2013/11/14/HYP.0000000000000003.citation

Adicionar: Amlodipino tab x 5 mg media tableta en la noche, luego 1 tableta en la noche.
Hasta: Amlodipino tab x 10 mg 1 tableta en la noche

Sin control a las 4 semanas (evalúe adherencia, HTA resistente)

Si TFGe>60 ml/min CG y potasio <4.5 mmol/l INICIO:
Amlodipino tab x 5 mg media tableta en la noche, luego 1 tableta en la noche.
Hasta: Amlodipino tab x 10 mg 1 tableta en la noche

Carrera 13 No.52-76 – Código Postal 110311, Bogotá D.C
Teléfono:(57-1)3305000 - Línea gratuita: 018000952525 - Fax: (57-1)3305050 - www.minsalud.gov.co
Medir la presión arterial (PA) a todos los adultos y en todas las consultas por un personal entrenado, siguiendo el protocolo recomendado y utilizando manómetros validados.

Si es así, 
REMITIR 
el paciente a un especialista.

Ulma actualización: 
DD/MM/AA

Dejar de fumar, 
evitar la exposición 
pasiva al humo de 
tabaco.

Evitar el 
consumo de 
alcohol.

Aumentar la 
actividad física 
al equivalente a caminar a 
ritmo vivo durante 150 
minutos por semana.

Si hay 
sobrepeso, 
perder peso.

Seguir una dieta saludable para el corazón:
 Consumir menos de una cucharadita de 
sal al día.
 Consumir ≥5 porciones de hortalizas/ - 
fruta al día.
 Uuizar aceites saludables.
 Consumir frutos secos, legumbres, 
cereales integrales y alimentos 
ricos en potasio.
 Limitar el consumo de carnes 
rojas a una o dos veces a la semana 
as máximo.
 Consumir pescado u otros 
alimentos ricos en ácidos grasos 
omega 3 como mínimo dos veces 
a la semana.
 Evitar los azúcares agregados.

Riesgo cardiovascular:
 Esamar el riesgo cardiovascular en todos 
los pacientes con hipertensión.
 Los pacientes con diabetes, enfermedad 
coronaria, accidente cerebrovascular o 
enfermedad renal crónica se consideran de alto riesgo cardiovascular.

El objetivo de PA es de <130/80 mmHg en 
as personas de alto riesgo cardiovascular, 
en los pacientes con diabetes, enfermedad 
coronaria, accidente cerebrovascular o 
enfermedad renal crónica.

Añadir estañas en todos los pacientes 
de alto riesgo cardiovascular con 
independencia de sus niveles de 
colesterol o de LDL colesterol.

Añadir estañas en los ≥ 40 años con 
riesgo cardiovascular moderado, con 
colesterol total ≥ 5 mmol/L (200 mg/dl) 
od LDL colesterol ≥ 3 mmol/L (120 mg/dl).

Añadir estañas en los ≥ 40 años con 
riesgo cardiovascular bajo, con colesterol 
total ≥ 8 mmol/L (320 mg/dl).

Considere añadir estañas en los que 
�enen un riesgo cardiovascular 
moderado.

Aspirina: Añadir aspirina en todos los 
pacientes de alto riesgo cardiovascular a 
menos que tengan contraindicaciones 
específicas.

Los pacientes con enfermedad coronaria y 
enfermedad cerebrovascular son 
tributarios de prevención secundaria según 
protocolo aprobado en el país.

ESTE PROTOCOLO ESTÁ CONTRAINDICADO EN 
LAS MUJERES QUE ESTÉN O PUEDAN QUEDAR 
EMBARAZADAS

Diuréticos: pueden producir hipotensión 
y pueden tener efectos desfavorables en 
los niveles de lípidos y glucosa.

El uso de bloquedores de los canales de 
calcio puede producirse un edema 
maleolar en hasta 10% de los pacientes, 
en especial con la dosis alta, si no se está 
uyizando un IECA o un ARA.

IECA:
 Comportan un pequeño riesgo de 
angioedema; el riesgo es mayor en las 
personas afrodescendientes (esto no se 
observa con los ARA).
 Los IECA (y los ARA) no deben 
administrarse a mujeres que estén o 
puedan quedarse embarazadas.
 Riesgo de hiperpotasemia, especial- 
mente si el paciente tiene una 
enfermedad renal crónica.

EN LAS AMÉRICAS
Nombre del país: Ecuador

Si la PA es ≥160/100 mmHg, iniciar tratamiento de inmediato.
Si la TA es ≥140/90 mmHg
Losartán 50 mg VO BID 
Clortalidona 12,5 mg VO QD 
Si persiste ≥140 o ≥90
Losartán 50 mg VO BID 
Clortalidona 25 mg VO QD 
Amlodipino 5 mg VO QD
Si persiste ≥140 o ≥90
Losartán 50 mg VO BID 
Clortalidona 25 mg VO QD 
Amlo
dipino 10 mg VO QD
Si persiste ≥140 o ≥90

COMPROBAR que el paciente ha estado tomando los medicamentos 
de manera regular y correcta. Si es así, REMITIR el paciente a un especialista.
Ethiopia

Hypertension Protocol

Measure blood pressure of all adults over 30 years of age.

Step 1
If BP is high (DBP 140-159 or DBP 90-99 mmHg)*
Prescribe amlodipine 5 mg.

Step 2
After 30 days, measure BP again. If still high:
Increase to amlodipine 10 mg.

Step 3
After 30 days, measure BP again. If still high:
Add hydrochlorothiazide 12.5 mg.

Step 4
After 30 days, measure BP again. If still high:
Increase to hydrochlorothiazide 25 mg.

Step 5
After 30 days, measure BP again. If still high:
Add lisinopril 20 mg.**

Step 6
After 30 days measure BP again. If still high:
Increase to lisinopril 40 mg.***

Special populations:

- Pregnant women and women who may become pregnant:
  DO NOT GIVE lisinopril, enalapril, or
  aliskiren to pregnant women nor
  to women of childbearing age who are not on
  effective contraception.

- Diabetic patients:
  Treat diabetes according to protocol.

- Heart attack or stroke:
  Begin low-dose aspirin (75 mg) and statin.

- People with high CVD risk (≥ 10%)
  Consider statin.

- Chronic kidney disease:
  ACE inhibitor or ARB preferred if close clinical
  and biochemical monitoring is possible.

Advice for lifestyle modification:

- Step tobacco use, and avoid secondhand
  harmful use of
  alcohol.

- Increase physical
  activity to equivalent
  of brisk walk 30
  min/week

- Reduce sodium to less
  than 1 tsp/day

Special conditions:

- Obesity:
  Ifoverweight, lose weight.

- Physical activity:
  Moderate intensity, 30
  minutes, 5 days a week

- Alcohol and Smoking:
  Avoid unhealthy intake of
  alcohol.

India – Kerala

Hypertension Protocol

Screen all adults over 18 years.

High BP: SBP > 140 or DBP > 90 mmHg

Step 1
If BP is high
Check 5. Creatinine and Urine Protein
Start on lifestyle modifications for 3 months. Review every month.
If BP is high at monthly review, start on drug treatment.

Review in 3 months. If BP is high
Start Amlodipine 5mg (CCB)

Review in 1 month. If BP is high
Add Telmisartan 40mg (ARB)
Along with Amlodipine 5mg

Review in 1 month. If BP is high
Intensify Telmisartan to 80mg
Along with Amlodipine 5mg

Review in 1 month. If BP is high
Intensify Amlodipine to 10mg
Along with Telmisartan 80mg

Review in 1 month. If BP is high
Add Chlorthalidone 12.5mg (diuretic)
Along with Amlodipine 10mg and Telmisartan 80mg

Review in 1 month. If BP is high
Confirm compliance to treatment. If confirmed, refer to specialist.

Blood pressure measurements:

- At least readings at an interval of 2 minutes. If readings differ by more than 5mm Hg, take a third reading. The lower of the readings should be taken as the representative SBP and DBP.

- If SBP ≥ 160 and/or DBP ≥ 110 Refer immediately to higher level after starting treatment.

- If SBP ≥ 160-179 and/or SBP ≥ 100-109
  Or base development SCD, S. leintum
  or hypertension-
  Aliskerin + statin
  Start drug treatment.

- If SBP ≥ 140-150 and/or SBP ≥ 90-99
  Start on lifestyle modifications.

Measuring blood pressure:

- Use a mercury sphygmomanometer or electronic
  digital oscillometric device that is validated using a
  standard protocol and calibrated regularly.

- Patient should relax for 5 minutes before
  measurement.

- Patient should not have had caffeine in the past
  hour or smoked in the past 30 minutes.

- Patient should not be seated comfortably with back
  supported, arm at heart level, and legs uncrossed.

- Appropriate cuff: length of bladder 80% of arm
  circumference, width 40% of arm circumference.

Lifestyle modification:

- All patients require lifestyle modification.

- Change diet
  Low saturated fat,
  Low sodium,
  Polyunsaturated
  fatty acid

- Reduce weight
  Target weight
  ≥ 18.5 - 22.9 kg/m

- Regular exercise
  Moderate intensity, 30
  minutes, 5/6 days a week

- Alcohol and Smoking
  Avoid unhealthy intake of
  alcohol.

- Life style modification
  Refer to specialist.
**India – Madhya Pradesh**

**Hypertension Protocol**

Measure blood pressure of all adults over 18 years.

High BP: SBP ≥ 140 or DBP ≥ 90 mmHg

**Step 1**
- If BP is high:
  - Prescribe Amlodipine 5mg
  - After 30 days, measure BP again.
  - If still high:
    - Increase Telmisartan to 80mg

**Step 2**
- After 30 days measure BP again.
- If still high:
  - Add Chlorthalidone 6.25mg
  - After 30 days measure BP again.

**Step 3**
- If BP is high:
  - Prescribe Amlodipine 5 mg + adherence counseling
  - After 30 days measure BP again.

**Step 4**
- If still high:
  - Add Telmisartan** 40mg
  - After 30 days measure BP again.

**Step 5**
- If still high:
  - Increase Telmisartan to 80mg
  - After 30 days measure BP again.

**Step 6**
- If still high:
  - Increase Amlodipine to 10mg
  - After 30 days measure BP again.

**Step 7**
- If still high:
  - Add Chlorthalidone 12.5mg
  - After 30 days measure BP again.

**Step 8**
- If still high:
  - Check that patient has been taking drugs regularly and correctly. If so, refer patient to a specialist.

**Lifestyle advice for all patients**
- Avoid tobacco and alcohol.
- Exercise 2.5 hours/week.
- Reduce salt, under 1 tsp/day.
- Eat less fixed foods.

---

**India – Maharashtra**

**Hypertension Protocol**

Measure blood pressure of all adults over 18 years.

High BP: SBP ≥ 140 or DBP ≥ 90 mmHg

Check for compliance at each visit before titration of dose or addition of drugs.

**Step 1**
- If BP is high:
  - Prescribe Amlodipine 5 mg + adherence counseling
  - After 30 days measure BP again.
  - If still high:
    - Add Telmisartan** 40mg

**Step 2**
- After 30 days measure BP again.
- If still high:
  - Increase Telmisartan to 80mg
  - After 30 days measure BP again.

**Step 3**
- If still high:
  - Add Chlorthalidone 6.25mg
  - After 30 days measure BP again.

**Step 4**
- If still high:
  - Increase Amlodipine to 10mg
  - After 30 days measure BP again.

**Step 5**
- If still high:
  - Add Chlorthalidone 12.5mg
  - After 30 days measure BP again.

**Step 6**
- If still high:
  - Check that patient has been taking drugs regularly and correctly. If so, refer patient to a specialist.

**Women who are or could become pregnant**
- Avoid Telmisartan.
- Avoid Amlodipine if pregnancy is planned or suspected.

**Diabetic patients**
- Treat diabetes according to protocol.
- Avoid alcohol and tobacco.

**Chronic kidney disease**
- ACE inhibitor or ARB preferred if close clinical and biochemical monitoring possible after specialist opinion.

**Women who are or could become pregnant**
- Avoid Telmisartan.
- Avoid Chlorthalidone.

**Dietary advice**
- Eat 5 servings of fruits and vegetables per day.
- Avoid pasta, chips, chocolates, dips, and processed food.
- Use healthy fats.
- Limit consumption of fluids containing high amounts of saturated fats.
- Reduce fat intake by changing how you cook:
  - Remove the fatty part of meat;
  - Use vegetable oil;
  - Boil, steam, or bake rather than fry;
  - Limit reuse of oil for frying.
- Limit intake of fried foods.
- Avoid foods with high amounts of saturated fat (e.g., cheese, ice cream, fatty meat).
- Avoid processed foods containing trans fats.
- Avoid added sugar.

**Lifestyle advice for all patients**
- Eat less than 1 tsp of salt per day.
- Avoid pasta, chips, chocolates, dips, pickles, etc.
- Exercise regularly:
  - 2.5 hours per week.
- Avoid alcohol and tobacco.
- Reduce weight by losing 1-2 lbs per week.
- Eat less than 1 tsp of salt per day.
- Avoid foods with high amounts of saturated fat (e.g., cheese, ice cream, fatty meat).
- Avoid processed foods containing trans fats.
- Avoid added sugar.

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**India Hypertension Management Initiative**

**Maharashtra**

**India – Maharashtra**
### Punjab

#### Hypertension Protocol

**Measure blood pressure of all adults over 18 years**

<table>
<thead>
<tr>
<th>Step</th>
<th>Instruction</th>
<th>SBP</th>
<th>DBP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>If BP is high:*</td>
<td>≥ 140</td>
<td>≥ 90</td>
</tr>
<tr>
<td>2</td>
<td>Prescribe Amlodipine 5mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>After 30 days measure BP again. If still high:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Increase to Amlodipine 10mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>After 30 days measure BP again. If still high:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Add Telmisartan 40mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>After 30 days measure BP again. If still high:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Add Chlorthalidone 12.5mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>After 30 days measure BP again. If still high:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Increase to Chlorthalidone 25mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>After 30 days measure BP again. If still high:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Check if the patient has been taking medications regularly and correctly. If yes, refer to a specialist.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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### Telangana

#### Hypertension Protocol

**Measure blood pressure of all adults over 18 years**

<table>
<thead>
<tr>
<th>Step</th>
<th>Instruction</th>
<th>SBP</th>
<th>DBP</th>
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<tbody>
<tr>
<td>1</td>
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<td>≥ 90</td>
</tr>
<tr>
<td>2</td>
<td>Prescribe Amlodipine 5mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>After 30 days measure BP again. If still high:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Increase to Amlodipine 10mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>After 30 days measure BP again. If still high:</td>
<td></td>
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<tr>
<td>6</td>
<td>Add Telmisartan 40mg</td>
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<tr>
<td>7</td>
<td>After 30 days measure BP again. If still high:</td>
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<tr>
<td>8</td>
<td>Add Chlorthalidone 12.5mg</td>
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<tr>
<td>9</td>
<td>After 30 days measure BP again. If still high:</td>
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<tr>
<td>10</td>
<td>Check if the patient has been taking medications regularly and correctly. If yes, refer to a specialist.</td>
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</tbody>
</table>

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### Lifestyle advice for all patients

- Avoid tobacco and alcohol
- Exercise 2.5 hours/week
- Reduce weight if overweight
- Reduce salt under 1 tsp/day
- Eat less fried foods
- Eat 5 servings of fruits and vegetables per day
- Avoid papads, chips, deep-fried, etc.
- Use healthy oils like sunflower, mustard, peanuts, etc.
- Avoid processed foods containing high amounts of saturated fats
- Avoid added sugar
- Use healthy oils like sunflower, mustard, peanuts, etc.
- Avoid processed foods containing high amounts of saturated fats
- Avoid added sugar

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### India Hypertension Management Initiative

- **Punjab**: 1.00-5-15
- **Telangana**: 1.00-8-18
Hypertension Treatment Protocol for Primary Health Care level

Measure blood pressure of all adults ≥ 18 years of age.

High blood pressure: SBP ≥ 140 mmHg or DBP ≥ 90 mmHg.

**Step 1**

- If BP ≥ 140/90 mmHg,
  - Start amlopidine 5 mg.

**Step 2**

- After 1 month, measure BP again. If still high,
  - Treat with amlopidine 5 mg + losartan 50 mg.

**Step 3**

- After 1 month, measure BP again. If still high,
  - Treat with amlopidine 10 mg + losartan 100 mg.

**Step 4**

- After 1 month, measure BP again. If still high,
  - Treat with amlopidine 10 mg + losartan 100 mg + HCTZ 25 mg.

**Step 5**

- After 1 month, measure BP again. If still high,
  - Refer for specialist hypertension management.

**Special populations**

- Pregnant women and women who may become pregnant
  - Do not give losartan to pregnant women nor to women of childbearing age who are not on effective contraception.
  - If pregnant, refer to obstetric specialist.

- Stop tobacco use and harmful use of alcohol

- Increase regular physical activity to at least 30 minutes daily.

- If overweight, lose weight.

- Eat a heart-healthy diet low in salt, trans fats and added sugar:
  - Eat 5 servings of fruits and vegetables per day.
  - Eat nuts, legumes, whole grains and foods rich in potassium.
  - Eat fish at least twice per week.
  - Use healthy oils like sunflower, flax seed, soybean, peanut and olive.
  - Limit red meat to once or twice per week.
  - Limit consumption of ultra-processed, canned and ‘fast’ foods.
  - Avoid donuts, cookies, sweets, fizzy drinks and juice with added sugar.

*Initial BP ≥ 160/110 mmHg, start at STEP 2.

*Initial BP ≥ 180/110 mmHg, give step 3 drugs and refer to the emergency unit of the nearest general hospital within 1 hour.

Notes:

- Single pill combination of amlopidine plus losartan is preferred to free combination.
- HCTZ = Hydrochlorothiazide.
- Telmisartan 40 mg and 80 mg if available is preferable to losartan.
- May substitute HCTZ 25 mg with amiloride 2.5 mg/HCTZ 25 mg if HCTZ is unavailable.
INSTRUCTIVO

1. Realice una medición de la presión arterial (PA) a todos los adultos ≥ 18 años y en todas las atenciones un personal entrenado, siguiendo el protocolo recomendado y utilizando tensiómetros válidos.

2. Si la PA es ≥ 140/90 mmHg después de un mes de tratamiento con buena adherencia.

3. Si la PA es ≥ 140/90 mmHg después de 4 semana.

4. Si la PA es ≥ 140/90 mmHg y presenta factores de riesgo.

5. Si la PA es ≥ 140/90 mmHg y presenta enfermedad renal crónica.

6. Si la PA es ≥ 140/90 mmHg y presenta enfermedad renal crónica.

7. Si la PA es ≥ 140/90 mmHg y presenta enfermedad renal crónica.

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49. Si la PA es ≥ 140/90 mmHg y presenta enfermedad renal crónica.

50. Si la PA es ≥ 140/90 mmHg y presenta enfermedad renal crónica.
High blood pressure: SBP ≥ 140 or DBP ≥ 90.

NOTE: Before moving to next titration step or referring the patient, make sure the patient is taking medications regularly and correctly.

If blood pressure is high,
Prescribe amlodipine 5 mg once daily.

After 1 month, measure BP again. If still high,
Continue amlodipine 5 mg and add losartan 50 mg once daily.

After 1 month, measure BP again. If still high,
Increase amlodipine to 10 mg and losartan to 100 mg once daily.

After 1 month, measure BP again. If still high,
Refer to a specialist.

Lifestyle advice for all patients
- Avoid tobacco use and harmful use of alcohol.
- Increase regular physical activity to at least 2.5 hours per week.
- If overweight, lose weight.
- Eat a heart-healthy diet low in salt, trans-fats and added sugar.
- Avoid added sugar.
- Limit intake of salty meats (ham, bacon, tocino, sausage, hotdogs) and salty fish (tuna, sardines, katsuoyu, tsukudani and sardines).
- Limit consumption of processed, canned and fast foods.
- Avoid donuts, cookies, sweets, fizzy drinks and juice with added sugar.

1. Losartan should not be given to women who are or could become pregnant.
2. Amlodipine and losartan should be taken together.

OTHER MANAGEMENT CONSIDERATIONS:
- Screen and manage other CVD risk factors such as smoking, obesity, diabetes and hypertension according to PHP's protocol.
- Aim for SBP < 130/80 for people at high risk, such as individuals with diabetes, prior heart attack, stroke, or chronic kidney disease.
- Urgent referral criteria:
  - BP > 180/100 with severe headache, other neurologic symptoms, nausea, chest pain, shortness of breath, or other evidence of endorgan damage.

STEP 1

STEP 2

STEP 3

STEP 4

COMPANY INFORMATION:

<Your company information here>
Measure blood pressure (BP) for all adults and in all consultations by trained personnel, following the recommended protocol and using validated manometers.

If BP is ≥160 / 100 mmHg, start treatment immediately.

If persists ≥140 or ≥90 persists

CONFIRM that the patient has been taking the medications regularly and correctly. If so, refer the patient to a specialist.

Stop all tobacco use, avoid secondhand tobacco smoke.

Avoid alcohol consumption.

Increase physical activity to equivalent of brisk walk 150 minutes per week.

If overweight, lose weight.

Cardiovascular risk:

- Estimate the cardiovascular risk in all patients with hypertension.
- Patients with diabetes, coronary heart disease, stroke or chronic kidney disease are considered high cardiovascular risk.

The goal of BP is <130/80 mmHg in people with high cardiovascular risk, in patients with diabetes, coronary heart disease, stroke or chronic kidney disease.

Staßns

- Add staßns in all patients of high cardiovascular risk regardless of their cholesterol or LDL levels.
- Add staßns in patients ≥ 40 years with moderate cardiovascular risk, with total cholesterol ≥ 5 mmol / L (200 mg / dl) or with LDL cholesterol ≥ 3 mmol / L (120 mg / dl).
- Consider adding staßns in those with moderate cardiovascular risk.

Aspirin: Add aspirin to all patients with high cardiovascular risk unless they have specific contraindications.

Patients with coronary heart disease and cerebrovascular disease should receive secondary prevention treatment according to the protocol approved in the country.

This protocol is based on the recommendations of the PAHO HEARTS protocol and has been approved by the [Ministry of Health of the country] and endorsed by the following organizations [insert names].

HEALTHY LIFESTYLE COUNSELING FOR ALL PATIENTS

- Eat a balanced diet, avoid processed foods, limit salt intake.
- Maintain regular physical activity.
- Limit alcohol intake.
- Eat healthy meals.
- Eat fruits, vegetables, whole grains and fruits rich in polyphenols.

Last updated: DD/MM/AA
1. The protocol on combination of medications for hypertension is an example that easily to be implemented by commune health stations that have just implemented hypertension management program.

2. If the patients are transferred from higher levels (at stable stage with protocol that the medications are available at CHSs) then follow the protocol of the higher levels.

3. If hypertension level 2 then starting from steps 2 (combining 2 types of medications).

4. If there is only one type of medication then increase the dose until target treatment is met. If maximum dose used but targeted blood pressure is not yet obtained then referring patients to higher levels.

5. Always educating and counselling patients for healthy lifestyles.

6. If targeted blood pressure is not yet obtained then checking the utilization of medications, chaging lifestyes and combination of medications.

Targeted BP (measured at a health facility)
- Systolic BP: 120 mmHg to < 130 mmHg in people < 65 years old and from 130 mmHg to < 140 mmHg in people ≥ 65 years old, can be lower if possible.
- Diastolic BP from 70 mmHg to < 80 mmHg.