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Latin America and the Caribbean, facing the cardiovascular tsunami: HEARTS 2.0 as a response to the growing burden of CVD in limited health systems



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I can help you understand clinical laboratory tests. I am a Clinical Pathologist and founder of Laboratory Medicine.



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Health sector and chronic diseases in Latin America and the Caribbean.

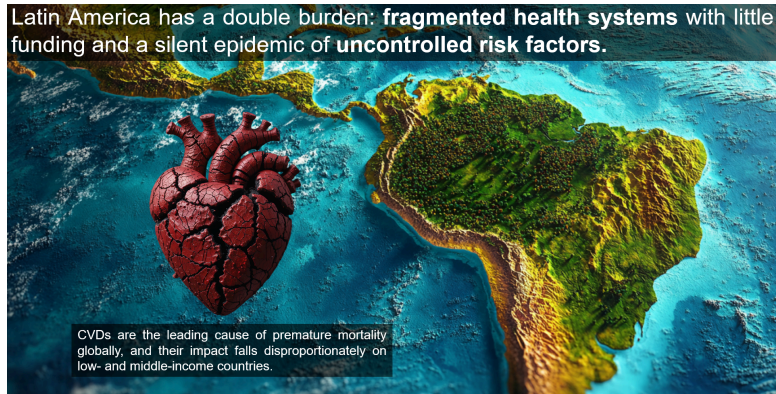
Some figures for Latin America and the Caribbean. There are 33 sovereign countries; on average 670 million people live there, we represent 8% of the world's gross domestic product (GDP) and middle-income countries predominate (1).



- 33 sovereign countries.
- Approximate population: 670 million.
- It represents about 8% of global Gross Domestic Product (GDP-PBI).
- It is considered a predominantly middle-income region.

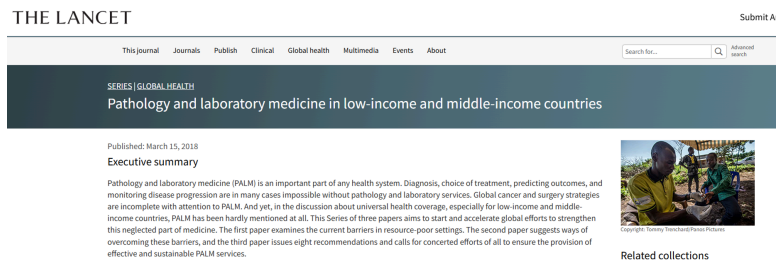
From a health perspective, Latin America and the Caribbean face a double challenge: fragile health systems with scarce resources (fragmented and segmented) and a silent epidemic of uncontrolled risk factors, which favor the increase in chronic non-communicable diseases such as obesity, diabetes, hypertension, heart attacks, strokes, and others (2,3). Of all these,

cardiovascular diseases are the leading cause of premature mortality worldwide, and their impact falls disproportionately on low- and middle-income countries (4).



Diagnosis of Clinical Pathology and Anatomical Pathology services in low and middle income countries

In 2018, LANCET published a diagnosis of pathology and laboratory medicine services in low and middle income countries and identified four barriers: insufficient workforce, inadequate education and training, poor physical and technological infrastructure, and limitations related to the quality, education and accreditation of clinical laboratories (5).

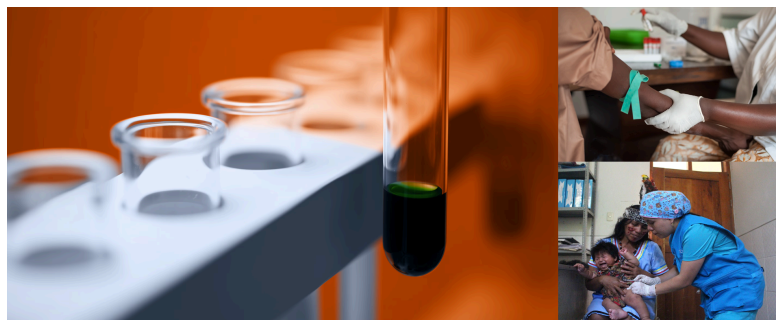


Four key barriers to access to pathology and laboratory medicine services were identified in low- and middle-income countries:



Limitations in addressing cardiovascular diseases in Latin America and the Caribbean

Cardiovascular diseases (CVDs), particularly ischemic heart disease (heart attack) and stroke, are the leading causes of death (18.6 million deaths annually) and disability (393 million disability-adjusted life years lost annually) worldwide. High blood pressure is the most important preventable risk factor for CVDs and mortality globally (10.8 million deaths annually) (6).



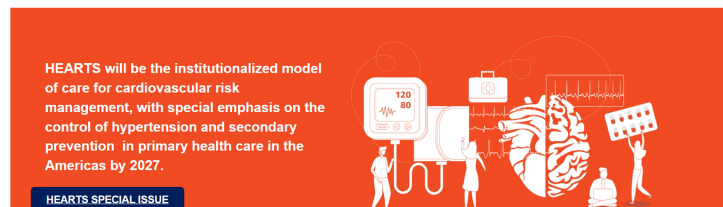
There are significant structural barriers to addressing CVDs. A study conducted in 12 countries in the region identified obstacles such as the segmentation of health systems, legal restrictions on the scope of practice of health professionals, and the lack of health information systems that allow for the operational evaluation and monitoring of interventions to reduce CVDs. Major changes in health care policies, the reorganization of service delivery systems, training and education, financing, and the participation of civil society are key to advocacy and accountability, essential principles of good governance (6).

HEARTS 1.0 Initiative towards HEARTS 2.0 in Latin America and the Caribbean

The HEARTS initiative has been implemented in Latin America and the Caribbean since 2016. This initiative, in its first version, prioritized reducing the prevalence of hypertension in the region. It has already been implemented in 34 countries, including more than 10,000 health centers, impacting more than 50 million people (7).



HEARTS in the Americas



In May of this year, The Lancet published how the HEARTS initiative has evolved from 1.0 to HEARTS 2.0 to harmonize guideline-based recommendations for comprehensive hypertension care and more holistically address cardio-renal-metabolic health, or what is known as CKM syndrome (Cardiovascular-Kidney-Metabolic), in primary healthcare. This updated clinical pathway builds upon the original HEARTS pathway (8).



THE LANCET Primary Care

As a regional adaptation of the WHO Global HEARTS initiative coordinated by the Pan American Health Organisation, HEARTS in the Americas has developed HEARTS 2.0 to harmonise guideline-based recommendations for integrated hypertension and CKM care in primary health care.

The updated clinical pathway builds on the original HEARTS pathway.

HEARTS 1.0 (hypertension only)

HEARTS 2.0 (CKM syndrome)

Ordunex P, Rosende A, Angell S et al. HEARTS 2.0: an implementation-oriented clinical pathway for integrated care of hypertension and cardiovascular-kidney-metabolic conditions in primary health care in the Americas. The Lancet Primary Care. 2026; https://www.thelancet.com/journal/S2468-2667(26)00057-0/fulltext

It includes the detection and treatment of hypertension as a pillar; then, the early detection of cardio-renal-metabolic syndrome, classifying patients at high risk, that is, those who have present cardiovascular disease, chronic kidney disease, diabetes mellitus or cardiovascular risk greater than 10% (8).

HEARTS 2.0 Standard Clinical Pathway

Integrated Cardiovascular-Kidney-Metabolic (CKM) Management for Primary Care

A DETECTION & DIAGNOSIS OF HYPERTENSION

All adults, regardless of age:
 ≥140/90 mmHg in NON HIGH-RISK individuals
 ≥130/80 mmHg in HIGH-RISK individuals

Measure blood pressure in all adults and at all visits

Implement targeted case-finding strategies for groups with limited access to healthcare services

Always repeat the measurement and calculate the average of the 2 readings to obtain the final Blood Pressure result

B EARLY CKM DETECTION AND RISK ASSESSMENT

Classify as **HIGH-RISK** if any of the following are present:

- ESTABLISHED CARDIOVASCULAR DISEASE (CVD)**
Coronary heart disease / Cerebrovascular disease / Peripheral vascular disease
- CHRONIC KIDNEY DISEASE (CKD)**
eGFR < 60 mL/min/1.73 m² and/or UACR ≥ 30 mg/g persistent for more than 3 months
- DIABETES MELLITUS (DM)**
HbA1c ≥ 6.5% or Fasting Glucose ≥ 126 mg/dl on 2 separate visits or Random Plasma Glucose ≥ 200 mg/dl
- CVD RISK SCORE ≥ 10%**
Use the HEARTS App to estimate risk score

Suspect Diabetes Mellitus in individuals with a BMI ≥ 25 kg/m²

Rule out CKD in individuals with Diabetes Mellitus

Closely monitor women with a history of hypertension during pregnancy

<https://www.paho.org/sites/default/files/2026/05/hearts-20-clinical-pathwayv2no-1.pdf>

There is a priority for the pharmacological treatment of hypertension to move away from monotherapy (only one medication) and towards combination therapy (two or more antihypertensive drugs). Furthermore, it emphasizes the importance of making lifestyle changes, such as getting enough sleep, eating well, losing weight, maintaining adequate glucose and lipid levels, and not smoking, among others (8).

C HYPERTENSION TREATMENT PROTOCOL AND COMPLEMENTARY CKM THERAPY

Blood pressure control targets: <140/90 mmHg in NON HIGH-RISK individuals, <130/80 mmHg in HIGH-RISK individuals

- Treatment initiation**
1 Tablet of Valsartan/Amlodipine 160/5 mg
- 2 WEEKS**
Patient above target after repeat BP measurement
1 Tablet of Valsartan/Amlodipine 320/10 mg
- 2 WEEKS**
Patient above target after repeat BP measurement
1 Tablet of Valsartan/Amlodipine/Hydrochlorothiazide 320/10/25 mg
- 2 WEEKS**
Patient above target after repeat BP measurement
1 Tablet of Valsartan/Amlodipine/Hydrochlorothiazide 320/10/25 mg + 1 Tablet of Hydrochlorothiazide 25 mg
- 2 WEEKS**
Patient above target after repeat BP measurement
1 Tablet of Valsartan/Amlodipine/Hydrochlorothiazide 320/10/25 mg + 1 Tablet of Hydrochlorothiazide 25 mg + 1/2 Tablet of Spironolactone 25 mg

Refer to the next level of care if blood pressure control is not achieved after one month of Step 5 treatment

Follow a healthy diet

Reduce sodium and increase potassium intake. Prefer low sodium/potassium-enriched salt

Keep a healthy body weigh

Avoid a sedentary lifestyle. Do at least 150 minutes/week of moderate-intensity physical activity

Avoid alcohol consumption

No Smoking or Vaping and ask for tobacco cessation treatment

Start treatment immediately after confirming hypertension

Follow the standardized protocol for hypertension in all individuals

Provide complementary treatment according to the CKM risk profile

Take all medications at the same time every day

COMPLEMENTARY TREATMENT for HIGH-RISK Groups			
	CVD	DM or CKD	CVD RISK SCORE ≥ 10%
Atorvastatin	80 mg/daily	20 mg/daily	20 mg/daily
Espagliflozin	10 mg/daily	10 mg/daily	-
Aspirin	81 mg/daily	-	-

This treatment protocol is not indicated in women of childbearing potential. Please follow the specific treatment protocols for hypertension in pregnancy

Do not discontinue Pharmacologic Treatment once targets have been achieved

From the clinical laboratory it includes some tests with specific objectives, such as LDL cholesterol < 100 mg/dL in the general population, fasting glucose < 100 mg/dL, glycated hemoglobin < 5.7% in the general population and the urine albumin-creatinine ratio (ACR) < 30 mg/g (8).

In summary, this WHO/PAHO initiative, HEARTS 2.0, strengthens primary care through a standardized clinical pathway for the prevention and control of cardiovascular, renal, and metabolic diseases. Its implementation in Latin America and the Caribbean is carried out through ministries of health, promoting unified protocols, cardiovascular risk assessment, and access to essential medicines. It is currently expanding in most countries of the region, being progressively integrated. Key achievements include the standardization of care, improved hypertension control, and its adoption in thousands of health facilities across Latin America and the Caribbean (8). A report summarizes all the evidence supporting this clinical pathway (9).

HEARTS 2.0 Standard Clinical Pathway

Integrated Cardiovascular-Kidney-Metabolic (CKM) Management for Primary Care

D FOLLOW-UP AND PREVENTIVE STRATEGIES IN PATIENTS UNDER BLOOD PRESSURE CONTROL

Assess Treatment Adherence at each visit	Ensure the follow-up with Non-Physician Healthcare Workers for Blood Pressure Monitoring and Treatment Intensification	Implement measures to prioritize care continually for Vulnerable Individuals (advanced age, social isolation, financial hardship)	Alongside this pathway, ensure continued adherence to specific treatment plans for DM, CKD, CVD, or other chronic conditions
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CONTINUITY OF CARE	NON-HIGH-RISK	HIGH-RISK
Minimal Follow-up intervals	Every 6 Months	Every 3 Months
Telemedicine to monitor treatment adherence and reduce loss to follow-up	✓	✓
Provide a 3-month medication supply	✓	✓
Lipid and glucose metabolism monitoring	Initially and Every 3 Years	Initially and Annually
Kidney function testing (eGFR and uACR) and electrolytes	Initially and Every 3 Years	Initially and Annually
ECG for the detection of LV Hypertrophy and Atrial Fibrillation	—	Initially and Annually
Influenza and COVID vaccination	Annually	Annually
Pneumococcal vaccination	Only individuals >65 years	All individuals with CVD, DM, or CKD regardless of age

Optimal Targets for CKM Health

- Blood Pressure — < 120/80 mmHg
- Body Mass Index — Between 18.5 and 24.9 Kg/m²
- LDL Cholesterol — <100 mg/dl in General Population <70 mg/dl in High-Risk
- Fasting Blood Glucose — <100 mg/dl
- Glycated Hemoglobin (HbA1C) — <5.7% in General Population <7% in Diabetes
- Urine Albumin-Creatinine Ratio (uACR) — <30 mg/g

! For Asymptomatic Severe Hypertension (SBP ≥180 and/or DBP ≥120 mmHg), follow the treatment protocol rather than referring to the emergency department.

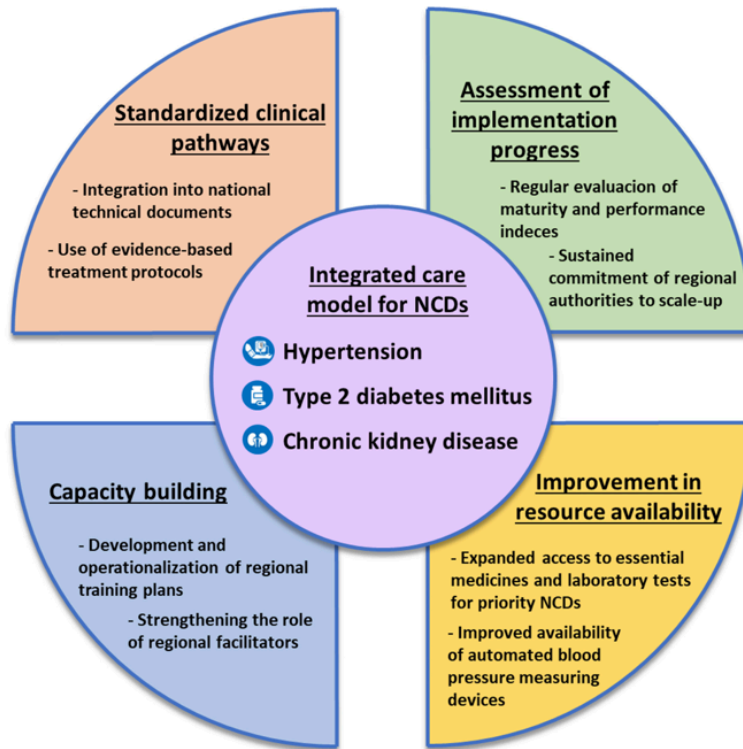
PAHO Pan American Health Organization / Organización Panamericana de la Salud

HEARTS

This clinical pathway is an evidence-based tool for standardized management of the CKM Syndrome. However, it is essential that individuals with DM, CKD, CVD, or other chronic conditions follow their specific treatment plans. Its goal is not intended to replace clinical judgment. Each country may adapt the pathway to align with local guidelines. All medications included serve as examples and were taken from the WHO Essential Medicines List. HEARTS-implementing countries may replace these with any agent from the three antihypertensive drug classes (ACEINIB, CCB or Thiazide/Thiazide-like diuretics, statins, or SGLT2). Start with a single-pill combination (SPC) or two individual pills if SPC is not available.

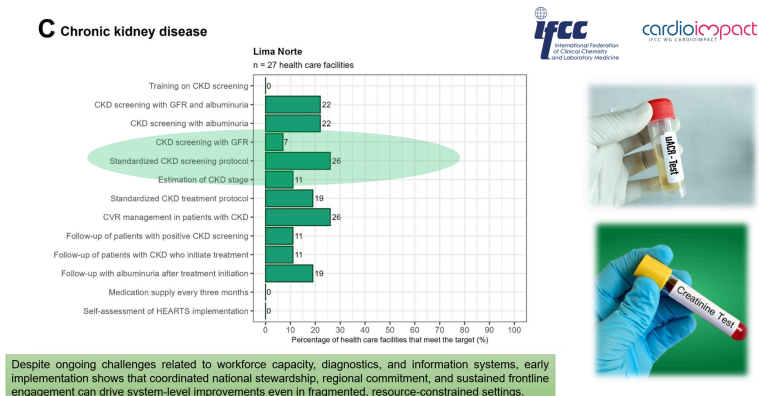
Peru and the progress of HEARTS 2.0

Peru has developed and implemented on a large scale an integrated, person-centered primary health care system based on the HEARTS model to support people with hypertension, type 2 diabetes mellitus, and chronic kidney disease. It combines standardized clinical pathways with validated indicators, as well as maturity and performance indices to promote evidence-based practice and continuous quality improvement in diverse primary care settings (10).



We can see, for example, that in an area of the capital, North Lima, patients' access to tests such as serum creatinine to estimate the glomerular filtration rate or albumin/creatinine in urine to determine the

ACR ratio is limited: out of 27 establishments, 7 had serum creatinine and 27 had albumin/creatinine in urine (10).



Despite these limitations, Peru's experience demonstrates that integrated, protocol-based care for non-communicable diseases can be implemented and scaled up in health systems with limited resources, offering a pragmatic framework for other low- and middle-income countries seeking to address multimorbidity (10).

Conclusion

We face four main limitations in Latin America and the Caribbean in addressing cardiovascular diseases (CVDs): fragile health systems, a diagnostic gap in providing all the necessary laboratory tests, limited access to essential medicines, and significant disparities in infrastructure, workforce, financing, and governance. However, a growing number of countries are implementing these clinical pathways to strengthen the fight against CVDs.

In conclusion, cardiovascular diseases (CVDs) remain the leading health threat in Latin America and the Caribbean, disproportionately impacting middle-income countries. HEARTS 2.0 emerges as a transformative strategy to strengthen prevention, early detection, and comprehensive management of cardiovascular risk. The future of millions of people will depend on our ability to bridge the gap between scientific evidence and clinical practice.

Links of interest

1. <https://www.bancomundial.org/ext/es/region/lac>
2. <https://news.un.org/es/story/2025/09/1540502>
3. <https://www.paho.org/es/temas/enfermedades-no-transmisibles>
4. <https://www.who.int/es/health-topics/cardiovascular-diseases>
5. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(18\)30460-4/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)30460-4/fulltext)
6. <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2023.1146441/full>
7. <https://www.paho.org/en/hearts-americas>
8. [https://www.thelancet.com/journals/lanam/article/PIIS2667-193X\(26\)00057-8/fulltext#fig1](https://www.thelancet.com/journals/lanam/article/PIIS2667-193X(26)00057-8/fulltext#fig1)
9. <https://iris.paho.org/server/api/core/bitstreams/c9393493-e769-44c0-90e1-25a3cabb5760/content>



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