

# Team-Based Hypertension Management in Primary Health Care

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## Executive summary

The burden of noncommunicable diseases (NCDs) is rising globally; hypertension, a chronic NCD, is the world's leading single cause of death. Chronic NCDs, including hypertension, require health systems to treat large numbers of patients for extended periods of time. Despite the increasing burden of hypertension and other NCDs on health care services, the world faces a shortage of trained health care workers to meet this demand, particularly in low- and middle-income countries.

Team-based care, or strategic redistribution of work among a diversity of health care worker types as part of a coordinated practice team, is a health care delivery model that can be the bridge from a physician-dependent hypertension control program to one shared across different health care worker categories working synergistically to achieve disease control. Team-based care allows care to be decentralized from hospitals to primary health care facilities and to the local community outside the walls of health care facilities, leading to increased efficiency as well as improved access to health care for patients.

Team-based care requires multi-sectoral and multi-level cooperation and effort. A team-based care approach to hypertension control requires organizing workflow to provide screening of hypertension and other chronic conditions among all people attending health facilities, a standardized treatment protocol for hypertension management, patient follow-up systems, referral linkages, monitoring and evaluation, and continuous quality improvement. When determining roles and responsibilities of team members, the complexity of tasks should be considered, as should any legal, or regulatory, constraints in the local jurisdiction. To motivate team members, financial or non-financial incentives can be considered, but they must be supported by strong and sensible performance-based indicators. Lastly, effective systems of governance are necessary to facilitate sustained support for team-based care.

Despite the challenges of implementation, team-based care has an established track record of success. Examples of team-based care for hypertension control in India, Thailand, Ghana, South Africa, Trinidad and Tobago, and the United States (all documented in this guide) resulted in improvements in hypertension screening, diagnosis, treatment adherence and control rates, as well as improved community support. These examples are consistent with the overall evidence supporting team-based care in the scientific literature. Taken together, this evidence illustrates both the enabling factors and the obstacles new team-based care initiatives will likely encounter.

## Scope and purpose

This guide is an expansion of the World Health Organizations’s (WHO) team-based care module of the HEARTS technical package (1). It provides guidance and resources to assist in implementing team-based care for hypertension at the primary health care facility level. The principles and examples presented provide a roadmap for national hypertension programs to move toward a team-based model of care; they can also be applied to NCD control programs more broadly. The application of this guidance should be contextualized to local settings.

## Introduction

### Chronic noncommunicable diseases and the need for team-based care

Hypertension is the world’s single leading cause of death. Like many other chronic NCDs, hypertension, or high blood pressure (BP), can be treated and controlled but not cured; once diagnosed, it persists for the rest of a person’s life. Worldwide, less than 15% of people with hypertension have it controlled (2). To achieve Sustainable Development Goal target 3.4 of reducing premature mortality from NCDs by 2030, it is crucial to scale up hypertension control globally. Most of the major hurdles to hypertension control are limitations in the health care system rather than patient behaviour, and some are the direct results of health care staff shortages (Figure 1).

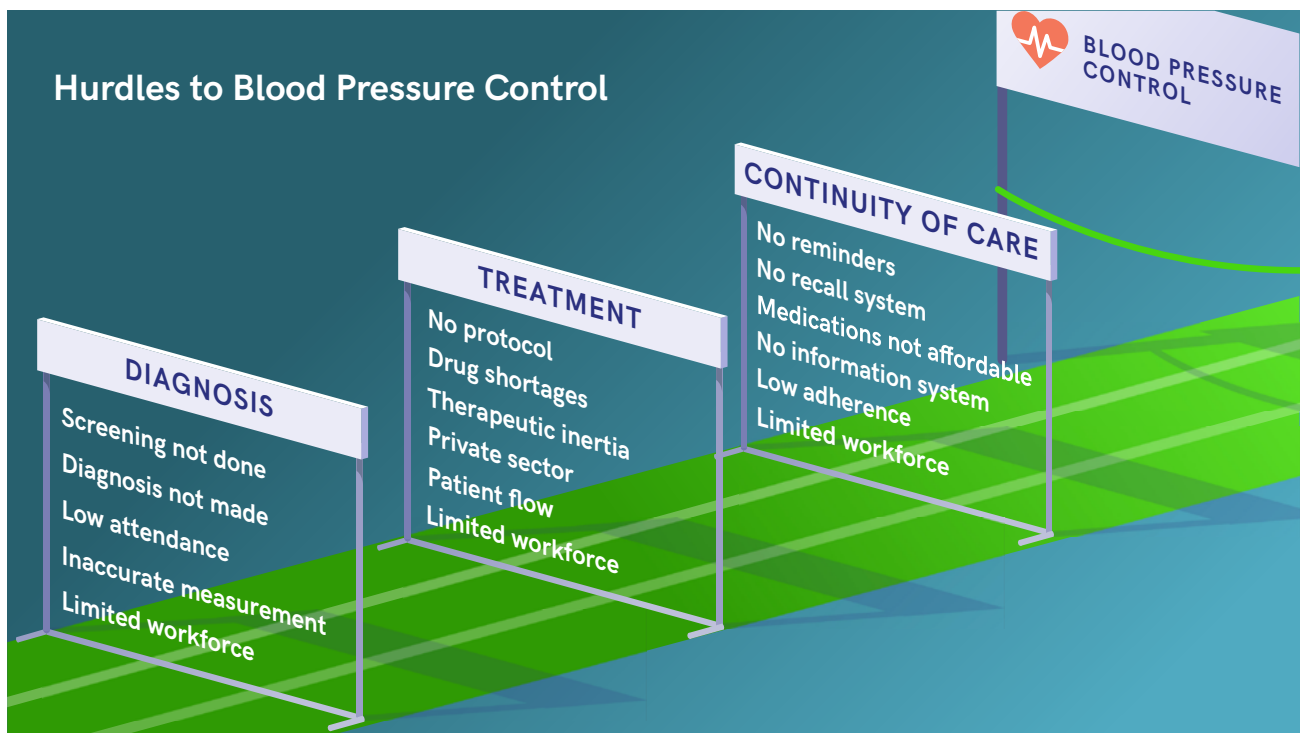


Figure 1: Hurdles to blood pressure control

Chronic NCDs such as hypertension require health systems to treat large numbers of patients for long periods of time, with patients often needing treatment for decades. A patient-centered model of care—one that is designed to meet the needs of each individual patient (3) and includes a high-quality community-based health care workforce—is critical to addressing the NCD epidemic, as many low- and middle-income countries face a shortage of trained health care workers (4, 5).

## Team-based care

Team-based care, which can involve task-sharing or task-shifting, involves a strategic redistribution of work among members of a multidisciplinary practice team (1). All members of the team play an integral role in providing care for each patient.

In a team-based care model, lay and mid-level health care professionals are trained to take on expanded responsibilities. For hypertension control, this could include safely performing clinical tasks and procedures that could otherwise be restricted to higher-level health care workers or physicians, such as measuring blood pressure or initiating treatment. Many settings face a shortage of higher-level providers such as physicians; distributing some tasks to other health care workers will allow the team to provide high-quality care to more patients. Even in well-resourced health systems, team-based care can offer a means of providing services that are more efficient and cost-effective, in a less medicalized environment (6).

Team based-care also allows for care to be more decentralized, leading to increased efficiency and improved access to care for patients (1). For example, in the 1990s, Costa Rica reformed its primary health care system to include care delivered by multidisciplinary teams comprised of a doctor, a nurse, a technical assistant, a medical clerk and a pharmacist. The teams provided both preventative and curative services at primary health care facilities and at patients' homes. This team-based model of care contributed to the reform's success; in the 12 years following implementation, the population with access to primary health care increased by 68% and infant and adult mortality declined by 8% and 2%, respectively (7-9).

Experiences from programs focused on treating and controlling other chronic conditions such as human immunodeficiency virus infection (HIV) also provide valuable lessons on how team-based care can improve management and control of NCDs by improving access to care, increasing patient satisfaction, and maximizing efficiencies for health care systems (10, 11). Systematic reviews have summarized the effectiveness of team-based care in controlling hypertension and diabetes in high- or low-income country settings (12-14).

Team-based care can be implemented at all levels of care, ranging from primary to tertiary; the aim of this document is to provide guidance for executing a team-based approach at the primary health care facility level.

This document will provide guidance on how team-based can be used in hypertension management to increase BP control. It will provide evidence of team-based care's effect on reducing BP in patients, provide examples of team-based care through case studies in various countries, examine key considerations for implementation, and outline the steps to follow in implementing team-based care model in a hypertension program.

### ADVANTAGES OF TEAM-BASED CARE

- Expanded access to care (more hours of coverage, shorter wait times)
- Better patient follow-up and support
- Improved patient adherence to medications
- Improved BP control and cardiovascular disease morbidity and mortality
- Saves time for patients and health care team
- Improved patient and physician satisfaction

## Understanding team-based care in practice

### The differentiated service delivery approach

Differentiated service delivery (DSD) is a health care delivery approach originally developed for people living with HIV that aims to simplify service delivery for patients at each step of the cascade of care and reduce burden on health care systems (11). DSD, a patient-centered public health approach, is designed by considering four building blocks of the model: what interventions are provided, who delivers the care, when or how frequently patients and the health system interact, and where the care is delivered (Figure 2). The answers to these questions support the development of services or interventions that meet the needs of each individual patient (or group of patients with similar characteristics), while distributing responsibilities appropriately between workers and levels of care.

This approach frees up time for physicians by having health care workers provide care for patients that do not require a physician’s support. For example, physicians may need to see patients with uncontrolled BP every month until their BP is controlled; for patients with sustained controlled BP, nurses, counsellors, or pharmacists can provide a brief check-in and a medication refill every three months. The latter can also more commonly be done at a community pharmacy or local health facility that may be closer to a patient’s home. Team-based care represents the “who” component of the DSD model.

**Although this guide will focus primarily on team-based care, it uses an adapted DSD model as a framework for analyzing case studies included here.**<sup>1</sup> The adapted DSD model captures which type of health care worker completes which task (what and who), at what health care level and type of facility the task is completed (where) and the frequency with which the task is completed (when). Considering these four aspects when designing an intervention can help to allocate resources more effectively—not all tasks require the same frequency or are appropriate for the primary health care level—and provide better access to care for patients (11). Box 1 provides an example of team-based care as part of a DSD package for managing hypertension in the context of the COVID-19 pandemic in India.

Patient-centered hypertension care using a public health approach	
WHEN (frequency of intervention)	WHERE
Monthly Every 3 months Every 6 months Yearly	Community Primary health center Hospital Referral center
WHO	WHAT
Community health care worker Pharmacist Nurse or clinical officer Medical officer Specialist	Screening Diagnosis Treatment initiation Medication refills Treatment monitoring Counselling

**Figure 2:** Differentiated service delivery model.

The “Who” component at lower left includes the members of the health care team: team-based care is a key component of DSD.

<sup>1</sup> This framework can also be applied to the management of other chronic conditions.



**Box 1****ENSURING ACCESS TO HYPERTENSION SERVICES DURING THE COVID-19 PANDEMIC IN STATES IMPLEMENTING THE INDIA HYPERTENSION CONTROL INITIATIVE****Background**

The India Hypertension Control Initiative (IHCI), a multi-partner, five-year initiative between the Ministry of Health & Family Welfare, Indian Council of Medical Research (ICMR), State Governments and WHO Country Office for India, was launched in 2017. The program was designed to improve hypertension management and control in several Indian states. With the onset of the COVID-19 outbreak in 2020, India experienced disruptions in health care services and travel restrictions, resulting in a decreased likelihood that patients would visit health facilities. To address these challenges and ensure that patients continued to receive essential care and medications, the IHCI program decentralized the delivery of routine services and drug refills to the Health and Wellness Centers (facilities which serve a population of 3,000-5,000). A team-based care model and the use of telemedicine helped facilitate continuity of care for hypertension patients during COVID-19.

**Intervention**

Beginning in March 2020, travel restrictions and disruptions to health care services due to COVID-19 made it more difficult for patients in India to travel to health facilities to receive necessary treatment to keep their blood pressure under control.

In the states of Maharashtra and Punjab, IHCI used a team-based care model to ensure that patients continued to receive essential hypertension care and medications during the pandemic. IHCI brought routine hypertension services closer to patients via at-home outreach and the expanded use of telemedicine.

*Home delivery of medications:* IHCI worked with local frontline health care workers including community health officers, auxiliary nurse midwives and accredited social health activists to deliver hypertension medications to patients' doorsteps. Patients needing refills were identified from IHCI's records (patient line list) and when supplies permitted, IHCI delivered extended prescriptions of two months or more, reducing the frequency of refills. IHCI's Senior Treatment Supervisors monitored medication delivery through regular telephone calls to staff nurses, auxiliary nurse midwives and patients.

*Telemedicine:* Using the Government of India's [Telemedicine Practice Guidelines](#), IHCI adapted [Simple, the mobile phone application](#) used in IHCI clinics to manage hypertension patients, to facilitate telemedicine consultations. Telemedicine is actively used through the Simple app to manage hypertension patients, however, there is a feature for managing diabetes patients on the app as well. Starting in June 2020, telemedicine via Simple was piloted in more than 300 facilities in Punjab and Maharashtra, with more than 2,000 requests for tele-consults recorded. After downloading Simple on their own smartphones, community health officers at Health and Wellness Centers or in the community could initiate a tele-consult with an IHCI medical officer easily; they opened patient's profile in the Simple app which directed users to WhatsApp to request a consultation. The medical officer then conducted the consultation with the patient and health care worker via phone, video, or text. Medical officers did not have to be physically present at sub-centers to prescribe medications. When a new prescription for hypertension medication was appropriate, the medical officer texted a photo of a prescription to the community health officer who was then able to renew that patient's medication. For patients with controlled blood pressure, the community health officer continued the treatment from the previous prescription.

India Hypertension Control Initiative	
WHEN	WHERE
Two-month medication refills	Community Primary Health Care level
WHO	WHAT
Auxiliary nurse midwives Accredited social health activists Senior treatment supervisors Community health officers Medical officer	Community delivery of medication Monitoring and oversight Medication refills w/ extended prescription Titration of medication through telemedicine Consultations and prescriptions

**Lessons Learned:**

The disruption caused by the COVID-19 pandemic presented an opportunity to strengthen team-based and patient-centered care. Community delivery of medication, telemedicine, and decentralization of services resulted in a significant improvement in patient follow-up at Health and Wellness Centers and increased patient adherence to medications in the context of COVID-19. These strategies can increase patient access to health services not only during the pandemic, but in the future as well.

# Team-based care approach in primary health care

## The example of hypertension care

Hypertension provides a useful example of a common chronic NCD that can be successfully managed by health care worker teams at the primary care level. For hypertension control programs, designating and forming multidisciplinary teams for patient care bridge a physician-dependent program to one where the work is allocated more efficiently across all health care workers on a team<sup>2</sup> working to achieve BP control (Figure 3). In a hypertension control program, the team may include generalist medical practitioners, nursing professionals, traditional and complementary medicine professionals, pharmacists, dieticians and nutritionists, counselling professionals, community health care workers, clerical staff and others.

Hypertension control challenges	Team-based care approach
<p><b>Diagnosis</b> Missing people with hypertension in community and health facilities</p>	<ul style="list-style-type: none"> <li>• Screening for hypertension should become a priority among the staff of the health facility.</li> <li>• Screening should be decentralized to the lowest level of health facilities or may be considered for community-based screening.</li> <li>• Each member will have a specific role in screening and diagnosing patients with hypertension.</li> </ul>
<p><b>Treatment</b> Inadequate and improper treatment</p>	<ul style="list-style-type: none"> <li>• Initiation of treatment may be done at the primary health care level.</li> <li>• Uncomplicated hypertension can be managed by nurses. They can share the task under overall guidance by doctors.</li> <li>• Facilities managed by nurses may be authorized to initiate treatment of hypertension by nurses based on a protocol.</li> </ul>
<p><b>Continuity of care</b> Poor compliance and poor follow-up</p>	<ul style="list-style-type: none"> <li>• Monitoring and management should be decentralized to the primary health care level or community.</li> <li>• All cadres of providers, especially community health care workers, nurses and providers of complementary systems of medicine can help to improve compliance to medication and facilitate follow-up.</li> <li>• Appointment spacing and multi-month refills may be provided for stable patients or those who have difficulty getting to health care facilities.</li> </ul>

**Figure 3:** Addressing the hurdles of hypertension control through team-based care

<sup>2</sup> Health care workers may be classified in various ways. In this document, health care workers are classified according to the WHO's international classification of health care workers. The distinction between categories of health care workers is made according to differences in skill level and specialization required to fulfil the tasks and responsibilities of jobs (Annex 2).

## Evidence supporting team-based for hypertension management


There is a strong body of evidence supporting team-based care for hypertension as a way to improve health care system efficiencies without negatively impacting patient outcomes. Evidence from a systematic review and meta-analysis of team-based care interventions, and their effects on controlling hypertension in low- and middle-income countries, found that overall mean systolic BP consistently decreased more in patients managed by a group of health care workers that utilized task-sharing compared to patients managed by health care workers that did not (“usual care”) (12). In the 31 trials included in the review, the overall mean systolic BP difference between team-based care intervention and usual care groups was -4.85 mm Hg, CI [-6.12 to -3.57]. The same trend was found for diastolic BP: the overall mean diastolic BP difference between intervention and control groups was -2.92 mm Hg, CI [-3.75 to -2.0] (12).

Interventions delivered by coordinated health care worker teams included lifestyle modifications through education and changes to health care services such as follow-up care, referrals, non-physician drug prescribing, algorithm-based management or organization of care. Interventions were delivered by teams including combinations of nurses, community health care workers (CHWs), pharmacists and dietitians.

Health care workers took on various roles in these interventions. For example, in an intervention in Ghana, nurses were provided with training to undertake tasks such as taking patients’ medical history, measuring BP, assessing cardiovascular disease (CVD) risk, initiating antihypertensive treatment according to a protocol, and titrating medications every month until BP control was achieved. After 12 months, this resulted in a greater reduction of systolic BP in the nurse-led task-sharing group compared to the control group (-20.4 mm Hg, [95% CI -25.2 to -15.6] vs. -16.88 mm Hg [95% CI -19.2 to -15.6 mm Hg, p = 0.021;] (15).

Another intervention, conducted in Nepal, trained female community health volunteers to visit patients’ households every four months to provide health counselling, measure BP, provide adherence support, and refer patients to the nearest facility if their BP was too high. For participants who were hypertensive, this intervention resulted in a significantly greater reduction in systolic BP than the group receiving usual care; the difference was -4.90 mm Hg (-7.78 to -2.00 mm Hg, p=0.001) (16).

## Key considerations for planning team-based care in hypertension care service delivery

 <b>1</b> Enabling policies	 <b>4</b> Decentralized care and referral system
 <b>2</b> Protocol-based hypertension management	 <b>5</b> Building a strong, coordinated team
 <b>3</b> Organization of hypertension services	 <b>6</b> Financial incentives to promote team-based care

When designing a team-based care approach for hypertension management, the following elements—based on lessons learned from Resolve to Save Lives’ hypertension program implementation experience and the WHO team-based care technical package (1)—should be considered. Assessing these elements ahead of team-based

care planning and implementation will help align the team-based care approach with the specific national or subnational context. If there are any barriers identified during the assessment that will limit the success of a team-based care model, consideration can be given to additional interventions to fill these gaps.

## 1. Enabling policies

Adopting a team-based approach requires an understanding of regulatory body policies affecting health care professionals and service delivery in the country. Policy guidelines and regulatory support with respect to redistribution of tasks may need to be modified to facilitate team-based care. For example, responsibilities among health care professionals, including prescription rights, may be restricted to specific cadres of health care workers. This would limit the possibility of shifting prescription renewals from a physician to a nurse or other health care worker. Legally expanding the cadre of health care workers who can prescribe or renew antihypertensive medication can free up time for both patients and physicians. This would also provide the opportunity for patients to receive regular hypertension follow-up at a lower level of care, where a physician may not always be present. Using a simple treatment protocol (described below) can facilitate the process of medication intensification for health care workers who are less specialized. In countries where telemedicine is being considered for integration into a hypertension control program, legalities of telemedicine should follow national guidelines. Any change in practice must be endorsed in national regulatory mechanisms and should be included in training curricula, job descriptions and operational guidelines for health care personnel.

## 2. Protocol-based hypertension management

Using simple drug- and dose-specific treatment protocols for hypertension management helps to standardize treatment and can make it possible for staff with less specialized training to support clinical care (17). Simple treatment protocols outline the treatment steps that should be followed if an individual has raised blood pressure. They differ from treatment guidelines because they have one specific drug and dose per step, making it easy to initiate and titrate medications without specialized knowledge. By using a single protocol, the majority of patients can be treated effectively by non-physician clinicians at the primary care level, allowing physicians to focus on patients who require more specialised attention. All team members should be clear on who is allowed to initiate and titrate treatment using the protocol, and those that use it should be adequately trained on how to use it.

Figure 4: Example of a hypertension treatment protocol from Telangana, India

## 3. Organization of hypertension services

Ministries of health and relevant partners should begin by developing and endorsing a team-based care framework for the national hypertension control program, including a simple treatment protocol. The framework should span the entire spectrum of service delivery including screening, diagnosis, linkage to care, treatment initiation, BP control, and follow-up and retention in care.

**Telangana**

# Hypertension Protocol

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

High BP: SBP  $\geq$  140 or DBP  $\geq$  90 mmHg

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

**Step 1** If BP is high:  
**Prescribe Amlodipine 5mg**

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

**Step 3** After 30 days measure BP again. If still high:  
**Add Telmisartan 40mg**

**Step 4** After 30 days measure BP again. If still high:  
**Increase to Telmisartan 80mg**

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

**Step 6** After 30 days measure BP again. If still high:  
**Increase to Chlorthalidone 25mg**

... After 30 days measure BP again. If still high:  
Check if the patient has been taking medications regularly and correctly. If yes, refer to a specialist.

**Pregnant women and women who may become pregnant**

- ACEI, ARB, Thiazolidinedione or Chlorthalidone.
- Statins, ACE inhibitors, angiotensin receptor blockers (ARBs), and thiazolidinedione-like diuretics should not be given to pregnant women or to women of childbearing age not on effective contraception.
- Calcium channel blockers (CCBs) can be used. If not controlled with interventional dose, refer to a specialist.

**Diabetic patients**

- Treat diabetes according to protocol.
- Aim for a BP target of  $<$  140/90 mmHg.

**Heart attack in last 3 years**

- Add beta blocker to Amlodipine with initial treatment.

**Heart attack or stroke, ever**

- High-dose aspirin (75mg and statin).

**Chronic kidney disease**

- ACEI or ARB preferred if close clinical and biochemical monitoring is possible.

• SBP  $\geq$  180 or DBP  $\geq$  110, refer patient to a specialist after starting treatment.

• SBP 160-179 or DBP 100-109, start treatment on the same day.

• SBP 140-159 or DBP 90-99, check on a different day and if still elevated, start treatment.

• Hydrochlorothiazide can be used if Chlorthalidone is not available (25 mg starting dose, 50 mg maintenance dose).

Recommended investigations at initiation of therapy: Haemoglobin, blood sugar, urine analysis for proteinuria, serum creatinine.

**Lifestyle advice for all patients**

Avoid tobacco and alcohol

Exercise 2.5 hours/week

Reduce weight if overweight

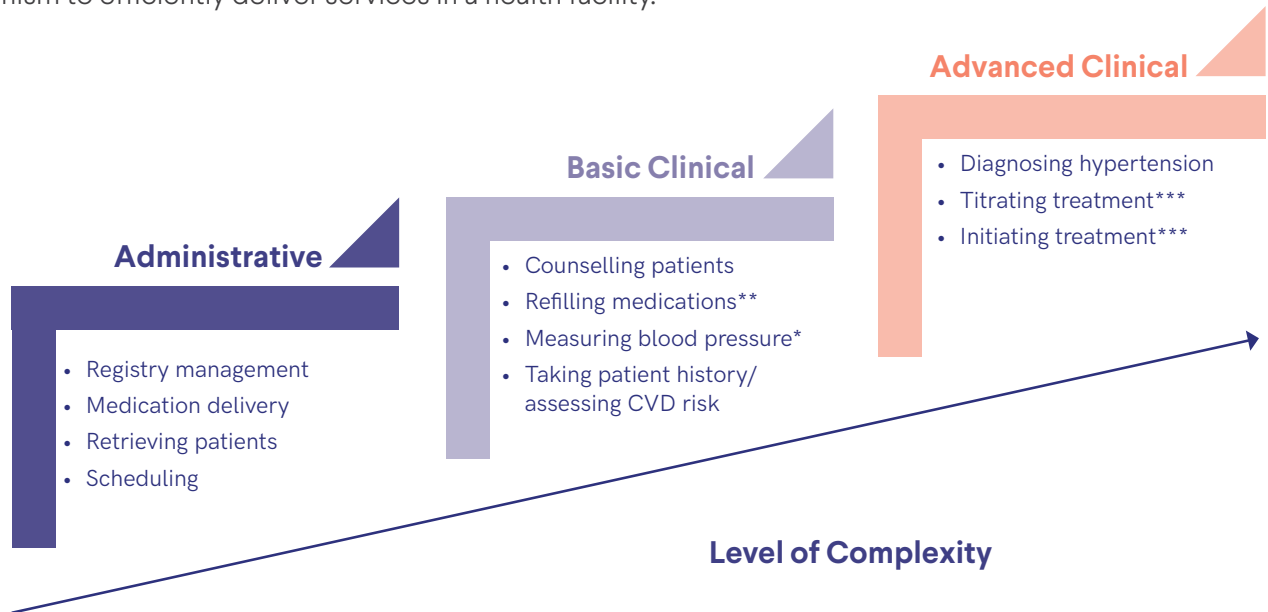
Reduce salt under 1 tsp/day

Eat lots of fruit and veg

- Eat 5 servings of fruits and vegetables per day
- Avoid papain, ribon, chitinase, daps, protease etc
- Use healthy oils like sunflower, mustard, groundnut, etc
- Limit consumption of foods containing high amounts of saturated fats
- Reduce fat intake by changing how you cook
- Exercise for 30 min of most days (preferably in the morning)
- Avoid processed foods containing trans fat
- Avoid added sugar

India Hypertension Management Initiative, Tirupuru, 1/2018

This is essential to ensure harmonization of services as well as stability and sustainability in the program. The sample framework in Figure 5 outlines the various activities that are conducted in a hypertension control program that can be shared amongst a team of health care workers. The tasks are represented along a continuum of complexity and can be undertaken by various types of health care workers, depending on levels of capacity and training and supervision. The team-based approach to hypertension care used in Trinidad and Tobago, (Box 2) offers an example of distribution of tasks across different health care worker categories as a mechanism to efficiently deliver services in a health facility.



**Figure 5:** Arrangement of hypertension management activities in order of complexity for health care workers

Activities are separated into three levels of tasks; Blue level: Administrative tasks that can be completed with limited clinical knowledge; Orange level: Tasks that require a higher degree of clinical knowledge, but that can be performed mostly independently from direct physician supervision or additional support; Orange level: Tasks that require the highest level of clinical knowledge and supervision or support (such a standard treatment protocol, or phone call with a physician). Detailed definitions of tasks are included in Annex 1. \* with an automated device; \*\* without a change in dose or medications; \*\*\* per protocol

**Box 2**

**IMPROVING HYPERTENSION CONTROL THROUGH TEAM-BASED CARE IN TRINIDAD AND TOBAGO**

**Background**

In Trinidad and Tobago, hypertension is one of the five major causes of death and a leading cause of hospitalization among the elderly. In 2017, the Ministry of Health (MOH) has implemented several resolutions and evidence-based interventions to reduce the prevalence of hypertension and other NCDs, and their risk factors, and limit their impact on the economy and sustainable development. The public health system in Trinidad and Tobago provides free primary, secondary and tertiary health services to residents under the oversight of the MOH.

Trinidad and Tobago is part of the HEARTS in the Americas initiative, a public sector health care program to reduce cardiovascular risk led by Ministries of Health with the participation of local stakeholders and the technical cooperation of Pan American Health Organization (PAHO). HEARTS in the Americas uses a team-based care approach to manage patients enrolled in hypertension control programs.

**Intervention**

Beginning in 2019, Trinidad and Tobago implemented a team-based care approach in its hypertension control program focused on improving routine blood pressure screenings, both in and out of health care centers.

In Trinidad and Tobago’s program, nursing assistants measure blood pressure as part of a routine baseline assessment for anyone visiting a health center. (This routine assessment also includes blood sugar measurement to screen for diabetes.) After the screening using a validated blood pressure device, physicians follow up with patients with controlled blood pressure every three to six months. Patients who have trouble controlling their blood pressure, or blood sugar, are seen more frequently and may be referred to a specialist or a health education officer for additional support to improve self-management.

The program’s target population is primarily of low- and middle-income adults living in both urban and rural settings. To reach patients who may not be seeking care directly, nursing assistants and district nurses perform additional screenings outside health centers. Mobile units and tents bring screening services directly to popular, accessible locations within the target community. Screening is also done in workplaces through staff health programs.

Whether in public health centers, workplaces or at community outreach events, all participants in a blood pressure screening receive a healthy lifestyle passport to help them document and track basic health indicators, including blood pressure and blood sugar measurements. A person can then present the passport, which includes measurements from the initial screening, to their health care provider to allow for continuity of care.

Trinidad & Tobago	
WHEN	WHERE
<p><b>Controlled patients:</b> Every three to six months</p> <p><b>Uncontrolled patients:</b> more frequently</p>	Primary care level
WHO	WHAT
<p>Medical records clerk</p> <p>Nursing assistant</p> <p>District nurse</p> <p>Pharmacist</p> <p>Dietician</p> <p>Physician</p>	<p>File retrieval and storage</p> <p>BP measurement</p> <p>BP measurement and review, referral</p> <p>Adherence and side effect monitoring</p> <p>Counselling and education</p> <p>Support, prescription refills, referral</p>

**Lessons Learned**

Widely accessible routine screening services and referral to specialist services based on a patient’s needs allows for better management of patients’ overall health. Within six months of implementation, the hypertension control rate increased by as much as 22.7% at one site. Increased hypertension control was attributed to:

- Increased BP monitoring using validated blood pressure measurement devices
- Use of Trinidad and Tobago’s Hypertension Treatment Protocols (in alignment with the HEARTS hypertension protocols)
- Training on the WHO HEARTS Modules for health care workers

Because regulations in Trinidad and Tobago do not currently allow nurses to titrate medication, nurses are limited to screening patients and delivering care during routine checkups. National protocols to simplify the titration process, along with amended regulations, further training and formal certification for nurses could be a pathway to expanding nurses’ scope of work and further tapping the potential of team-based hypertension care.





## 4. Decentralized care and referral system

An essential part of achieving blood pressure control is ensuring that diagnosed patients are followed up and retained in care. A patient with hypertension complicated by co-morbid conditions or difficult-to-control high BP can be referred to a specialist physician at a higher-level health care facility. Once patients have their BP controlled, they can be referred to the primary health care level for management by a nurse or other health care worker cadre; this may include community-based management and require less frequent clinic visits.

These referral linkages should be established before moving to a team-based care model. Members of the health care team should be knowledgeable about the available referral systems and trained to use them. An example of community-based care with strong referral linkages in the Indian state of Gujarat is outlined in Box 3.

Use of telemedicine may enable further decentralization and task-sharing in hypertension care. For example, monitoring patients in the community by taking BP measurements and asking about medication adherence may be part of a nurse or community health care worker's regular scope of work, but they may not be legally allowed to adjust medicines for patients whose BP is not controlled. In these situations, telemedicine can facilitate communication between a nurse or community health care worker who is with a patient in the community and a higher-level health care worker who is authorized to make medication adjustments. In some contexts, this may allow for a medication adjustment without necessitating a visit with the higher-level health care worker, reducing the time required of both the patient and the health care worker.

### Box 3

## TEAM-BASED CARE FOR IMPROVING MANAGEMENT OF CHRONIC NCDs IN GUJARAT, INDIA

### Background

Shree Krishna Hospital is a rural teaching hospital in western India, affiliated with Bhaikaka University's Pramukhswami Medical College. The Shree Krishna Hospital Programme for Advancement of Rural and Social Health (SPARSH) uses a rural model of comprehensive NCD prevention and management in a primary care setting, with mobile health teams conducting population-based screenings and monitoring treatment, referring patients with uncontrolled hypertension, diabetes or other related complications to specialized facilities. Started in 2016, SPARSH currently operates in 150 villages across three districts of Gujarat, India. At the end of March 2020, 1,901 NCD patients were enrolled in SPARSH.

### Intervention

In the SPARSH health care delivery framework, there are hypertension and diabetes management activities at the grassroots level, the intermediate level (secondary or primary care hospitals) and at highest level (tertiary care teaching hospital).

At the grassroots level, mobile health teams carry out NCD screenings, which include blood pressure and blood sugar measurement, at screening camps in the community. These teams use a protocol-based approach to hypertension and diabetes patient management through a digital application, which is linked to an outcome-based program management information system. Trained village health care workers provide home monitoring and delivery of medications.

Patients who have uncontrolled hypertension or diabetes or who experience complications are referred by village health care workers or mobile health care teams to secondary or primary care hospitals for



further support, or a tertiary care teaching hospital for further intervention. At a tertiary care teaching hospital, medical officers can provide prescriptions through the SPARSH app.

Incentives are given to village health care workers; other staff members are on fixed salary.

SPARSH Program, India	
WHEN	WHERE
Camps are held every 2 months	Community level (mobile camps)
Monthly home visits by VHW	Secondary care level
Medicines issued for one month	Tertiary care teaching hospital
WHO	WHAT
Village workers, mobile health team	Measuring BP, group awareness, conducting surveys, escorting patients, follow-up visits
Assistant medical officer	Patient assessment and admin tasks
Paramedical assistants	Registration and vital measurements
Field supervisors	Supervision and monitoring, oversight
Medical officer	Provides prescriptions through app

### Lessons Learned

The SPARSH program demonstrates a model for managing hypertension and diabetes through a primary care approach without the involvement of a physician.

At the start of the program, the blood pressure control rate among hypertensives was 36% and glycemic control (HbA1c < 7 gm%) among diabetics was 22%. By March 2020, among the enrolled patients, 67% of hypertensives and 48% of diabetic patients had their disease under control.<sup>3</sup> The control rates achieved were significantly higher than the national averages<sup>4</sup>.

In low-resource settings where a physician may not always be available, such an approach is a cost- and resource-effective way to improve blood pressure and control rates, thus contributing to reduced NCD morbidity and mortality.



## 5. Building a strong, coordinated team through training and certification

Team-based care requires adequate provision of training for staff members undertaking new tasks. Training should be competency-based, followed by an assessment and certification that is, ideally, nationally endorsed. Standardized training material and training methods should be planned at the national level. Involving professional associations and educational and training institutions in the development and use of teaching

3 HTN control in rural population in India – 10.7% (Anchala R, Kannuri NK, Pant H, Khan H, Franco OH, Di Angelantonio E, et al. Hypertension in India: a systematic review and meta-analysis of prevalence, awareness, and control of hypertension. J Hypertens. 2014 Jun;32(6):1170–7.)

4 Glycemic control in rural population in India – 30.8% (Unnikrishnan R, Anjana RM, Deepa M, Pradeepa R, Joshi SR, Bhansali A, et al. Glycemic control among individuals with self-reported diabetes in India—the ICMR-INDIAB Study. Diabetes Technol Ther. 2014 Sep;16(9):596–603.)

materials is also recommended. Tasks that team members may receive training on can include scheduling patient appointments, managing an electronic registry and locating patient records, measuring patients' BP, following the simple treatment protocol, giving lifestyle advice for individuals with hypertension, explaining potential medication side effects, supporting the retention of patients in care and retrieving patients that are lost to follow-up.

## 6. Incentives to promote team-based care

Team-based incentives, both financial and non-financial, can help retain staff and enhance the performance of health care workers with new or increased responsibilities. Financial incentives should be considered in addition to an adequate salary and should be appropriately costed and adequately financed while preparing the program budget. Incentives may also include awards and recognition from the community and health system or career progression avenues. In India, the Ministry of Health issued guidelines for Comprehensive Primary Health Care through Health and Wellness Centers identifying performance-linked payments as a strategy to improve motivation levels and enhance accountability to the population. Members of the health care worker team receive incentives based on the number of patients screened for hypertension and initiated on treatment (Table 1).

Incentives may have disadvantages. Performance-based incentives may encourage teams to overemphasize the importance of the chosen performance metrics, which may not substantively improve patient experiences or health outcomes. Focus on these measures can distract health care workers from performing nontargeted activities. Financial pressure to reach specific targets may unintentionally encourage data falsification or selective data entry. Incentivizing may also create a sense of competition among staff, if not all staff are rewarded equally, which could potentially harm team collaboration. Well-designed incentive programs can avoid these pitfalls by carefully selecting performance indicators and rewarding entire teams rather than individuals. Programs must be nimble and adapt incentive strategies that are not yielding improved health care quality and population health.

Assessment indicator	Definition	Source of verification/ reporting	Service delivery output to receive 75% of incentive payment	Service delivery output to receive 100% of incentive payment
Proportion of individuals aged >30 years screened for Hypertension	<p><b>Numerator:</b> Number of individuals screened for HTN</p> <p><b>Denominator:</b> Total population aged &gt;30 years</p>	Health & Wellness Center register/ NCD-application	80% individuals among eligible population screened for HTN every month	100 % individuals among eligible population screened for HTN every month
Proportion of hypertension patients on treatment	<p><b>Numerator:</b> Number of patients with HTN who are on treatment</p> <p><b>Denominator:</b> Total number of HTN patients</p>	Health & Wellness Center register/ NCD-application	80% of patients with HTN received treatment	100% of patients with HTN received treatment

**Table 1:** Indicators to assess monthly performance of health and wellness center team in India (18).

# Implementing team-based care for hypertension control programs within health facilities

Adapted from the [WHO HEARTS Team-Based Care module](#)

Implementing team-based care is specific to country, regional and clinic contexts. National guidance and policies that support task-sharing are critical to enable implementation at the primary care facility level. After reviewing the six key considerations for planning team-based hypertension care, there are six general steps to implement team-based care for health care systems and individual primary health care facilities (Table 2). These steps can be adapted to suit the local context in terms of legal and regulatory framework, human resources and health care worker categories, medical service packages, existing workflows, and information systems. For example, as a part of the HEARTS in the Americas Initiative, the Pan American Health Organization (PAHO) developed an innovation group that uses lessons learned from other program models, including Kaiser Permanente, to build a new team-based model of care for hypertension control in the region. The initiative, described in Box 4, is an example of how a team-based care model can be developed and implemented. Additional tools can be found in the HEARTS Team-based care package (1).

## Box 4

### PAN-AMERICAN HEALTH ORGANIZATION /HEARTS IN THE AMERICAS INNOVATION GROUP

#### Background

[HEARTS in the Americas](#), the regional initiative of WHO Global HEARTS program, is led by Ministries of Health with the participation of local stakeholders and the technical cooperation of Pan American Health Organization. It seeks to promote global best practices to prevent and control cardiovascular diseases (CVD) by integrating strategies into existing health delivery services that will improve control for high blood pressure and emphasize primary health care for secondary CVD prevention. The initiative is expanding to include 739 primary health centers in 16 countries serving approximately 7.5 million adults.

HEARTS in the Americas works to enhance team-based care through the [Chronic Care Model](#). This approach is consistent with lessons learned from Kaiser Permanente Southern California's (KPSC) hypertension care model and the foundations of the Kaiser care pyramid (4, 5).

#### Intervention

In June 2020, the HEARTS in the Americas initiative convened a multidisciplinary innovation team of HEARTS implementers, including specialist and primary care physicians, nurses, public health administrators, and IT experts from 10 PAHO countries. The group is co-chaired by the PAHO HEARTS team and the Kaiser Permanente Southern California hypertension program leader.

The innovation group reviewed and discussed approaches to hypertension management, including the HEARTS technical package, KPSC's hypertension model of care, the Hypertension Control Change Package based on KPSC's model, and U.S. CDC's Million Hearts Hypertension Control Change Package, to develop successful and sustainable programs in Latin American and Caribbean contexts.

After reviewing the literature, the group identified the key drivers to improve hypertension control and developed a methodology called "Rolling HEARTS drivers to improve hypertension control for primary health care facilities." They also developed two scorecards outlining metrics to guide implementation and evaluate the performance of this methodology.

The first of these scorecards, the HEARTS Implementation Maturity Score, is aimed at strengthening the processes and evaluating system maturity, including the following domains: blood pressure measurement

accuracy, treatment intensification, continuity of care and follow-up, standardized treatment algorithm, team-based care task-shifting, CVD risk, and medication refill.

The second scorecard, the HEARTS Performance Evaluation (Performance Index), synthesizes two of the most important outcomes of the program: coverage and control of hypertension.

The innovation group is developing a teaching methodology that involve demonstration sites, virtual courses, webinars and other educational materials that will include:

- Configuring multidisciplinary primary care teams
- Strengthening the competencies of primary care team members
- Planning and implementing training programs for the primary care team in the redesign of flowcharts
- Development of tools to improve feedback with performance data
- Improvement in the performance of primary care teams
- Development of methodology for continuous quality improvement

If successfully implemented, these concepts could become a model for improving healthcare throughout Latin America.

 <b>1</b> Engage the team	 <b>4</b> Task reassignment for clinic and staff management
 <b>2</b> Determine team composition	 <b>5</b> Design workflows to reflect the new model of care
 <b>3</b> Identify tasks	 <b>6</b> Monitoring

## 1. Engage the team

Bring together a multi-disciplinary team of nurses, medical assistants, physicians, pharmacists, community health care workers, nutritionists, administrators, and information technology staff members. The team leader should have enough authority within the practice or organization to effectively lead change and empower all team members to participate in the process. Consider involving patients on the team as well (1).

## 2. Conduct a review of policies affecting health professionals and service delivery

This can include legal scope of work for categories of health care workers and regulations for use of telemedicine. Determine what can be done within the current legal context and what evidence is needed to advocate for policy change, if necessary.

## 3. Identify hypertension management tasks based on team-based care framework

List out the tasks in the hypertension control program and map them in order of their complexity (Figure 5). Identify anticipated barriers to implement the tasks (Annex 1) and suggest solutions to overcome the barriers and challenges through a team-based approach. In defining the tasks of team members, also consider at which level of care this task is best fulfilled and how often this task should be completed for various types of patients (e.g., patients with controlled BP vs. patients with uncontrolled BP).

## 4. Conduct baseline analysis of the health care team

Before implementing a team-based care plan, an analysis of existing human resources and health care worker roles should be undertaken to provide information on the availability and distribution of current human resources and assess the gaps in service provision. Task analysis can be carried out to assess the extent to which task-shifting or task-sharing is already taking place. The [WHO HEARTS “Team-based care” module](#) provides a tool that can be used to assess the current distribution of the workforce (1). Table 3 provides an example of a facility that has conducted a baseline analysis of the health care team using the WHO tool.

Task	Doctor	Hypertension specialist	Nurse	Pharmacist	Counsellor	Nutritionist	Social Worker	Community health care worker (CHW)	Clerical staff
Take patient history	✓	✓	✓						
Diagnosis	✓	✓	✓						
Regular evaluation for complications	✓	✓	✓						
Highly complex patients*		✓							
Identify barriers	✓	✓	✓	✓					
Take BP measurement	✓	✓		✓					
Lifestyle counselling	✓	✓	✓		✓		✓	✓	
Refill medications	✓	✓		✓					
Adjust medications	✓	✓							
Patient follow-up	✓		✓					✓	
Refer patient	✓		✓	✓				✓	
Data entry	✓		✓					✓	✓
Appointment scheduling	✓		✓					✓	
Appointment reminders	✓		✓					✓	

Health care worker currently has capacity to perform this task

**Table 3:** Sample distribution of current staff responsibility for hypertension management

Tool from the WHO HEARTS “Team-based care” Package (1)

\* Defined as patients who do not improve despite multiple therapies, or patients with suspected secondary causes.



## 5. Health care team composition and redistribution of roles

Once the baseline analysis is complete, each of the team members can be reassigned roles depending on the existing task distribution, health care worker capacity, and service provision gaps. Consider which current team members could learn a new skillset and fulfil a new role. For example, in Table 3, most tasks are undertaken by the physician and nurse, with community health care workers taking on many administrative tasks. The WHO HEARTS Team-based care tool is shown again in Table 4, but with the tasks redistributed amongst new and existing team members. Training health care workers to perform more than one task allows tasks to be shared amongst the team. This allows the team more flexibility when delivering services, and frees up more time for physicians and nurses to focus on patient management.

TEAM-BASED HYPERTENSION MANAGEMENT IN PRIMARY HEALTH CARE

Task	Doctor	Hypertension specialist	Nurse	Pharmacist	Counsellor	Nutritionist	Social Worker	Community health care worker (CHW)	Clerical staff
Take patient history	✓	✓	✓		✓	✓	✓	✓	
Diagnosis	✓	✓	✓						
Regular evaluation for complications	✓	✓	✓	✓				✓	
Highly complex patients*		✓							
Identify barriers	✓	✓	✓	✓	✓	✓	✓	✓	✓
Take BP measurement	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lifestyle Counselling	✓	✓	✓	✓	✓	✓	✓	✓	
Refill medications	✓	✓	✓	✓					
Adjust medications	✓	✓	✓	✓					
Patient follow-up	✓		✓		✓	✓	✓	✓	✓
Refer patient	✓		✓	✓	✓	✓	✓	✓	
Data entry	✓		✓					✓	✓
Appointment scheduling	✓		✓					✓	✓
Appointment reminders	✓		✓					✓	✓

■ Health care worker currently has capacity to perform this task  
■ Staff that were trained under the new team based care model and can now also perform this task.

**Table 4:** Sample redistribution of team responsibilities for hypertension management

Tool from the WHO HEARTS “Team-based care” Package (1)

Responsibilities may differ based on who is leading the health center. For example, if a health center is led by a medical practitioner, nurses can measure the BP of all adults coming to the facility and, depending on the patient load, manage uncomplicated cases. In a nurse-led center, a nurse is more likely to diagnose and manage uncomplicated cases, while BP measurement may be provided by a community health care worker (Figure 6). However, whether the nurse will be authorized to initiate hypertension medication is to be determined according to local regulations and context. An example of a nurse-led intervention in Ghana is showcased in Box 5.

**BOX 5**

**TASK-SHIFTING STRATEGIES FOR HYPERTENSION CONTROL (TASSH) IN ASHANTI, GHANA (1)**

**Background**

Physician shortages present a barrier to hypertension control at the primary health care level in Ghana; in 2015, there was only one physician for every 10,000 patients.

The [World Health Organization \(WHO\) Cardiovascular Risk Package](#), which addresses multiple factors that contribute to cardiovascular disease (CVD), identifies hypertension management as an entry point to cardiovascular risk management. It outlines strategies including task-sharing to increase hypertension management and control, especially in low- and middle-income countries

**Intervention**

In Ghana’s Ashanti Region, community health nurses were mainly responsible for managing reproductive and maternal child health issues in rural communities. From 2012 through 2017, nurses in were trained to give hypertension treatment through a task-shifting strategies for hypertension control (TASSH) intervention. This training taught nurses to administer medications following a predetermined hypertension treatment protocol based on the WHO Cardiovascular Risk Package, with titration and adjustments made as needed with supervision from a physician, and provide lifestyle counselling.

After completing the training, all nurses were responsible for taking a patient’s medical history and measuring blood pressure (BP) using an automated device. They also performed laboratory tests using point-of-care testing to assess fasting blood glucose, cholesterol levels and urine dipstick for proteinuria. Nurses then used the results to assess patients’ CVD risk, aided by the validated WHO prediction risk charts. Those with high CVD risk were referred to the district hospital for further management by a hypertension specialist and those that had low or medium risk were initiated on antihypertensive treatment by the nurse, using a standard treatment protocol.

The treatment protocol included the four major antihypertensive medications—bendrofluazide, a diuretic; amlodipine, a calcium channel blocker; lisinopril, an angiotensin-converting enzyme inhibitor; and metoprolol, a beta-blocker. Every month, the nurses titrated medications until BP control was achieved.

The program has since expanded to the Brong Ahafo region, and is currently ongoing.

Ghana	
WHEN	WHERE
Medication titration every month until BP controlled Clinic visits once per month	Community health centers District Hopsitals
WHO	WHAT
Community health nurses	Medical history & BP measurement CVD risk assessment Initiating treatment Titrating medications Lifestylecounseling Refferal of high-risk patients to higher level



**Lessons Learned**

Training nurses in task-shifting strategies for hypertension control based on the [WHO Cardiovascular Risk Package](#) improved the management and control of hypertension.

Following the training, researchers conducted a study in community health centers in the Ashanti Region on the impact TASSH intervention. Using a cluster-randomized design, 32 community health centers and district hospitals were randomly assigned to either the intervention group (16 sites) or the control group (16 sites). Patients at the sites in the control group received only health insurance coverage in addition to usual care, while patients at the sites in the intervention group received health insurance coverage plus treatment from the WHO CVD-risk management package used by trained community health nurses.

Prior to the training, most nurses had limited knowledge of basic protocols such as anthropometric measurements or categorizing patients into high, medium or low risk for cardiovascular disease (CVD). In a baseline survey conducted before the training, only 26.9% of nurses were considered to be proficient at hypertension management (determined by an 80% score on a hypertension knowledge assessment questionnaire). At post-training, 95.7% of nurses surveyed were considered proficient.

The patients in the intervention group had a greater reduction in systolic BP than the control group after 12 months (-20.4 mm Hg, 95% CI -25.2 to -15.6 for intervention vs. -16.88 mm Hg, 95% CI -19.2 to -15.6 for control) and the reduction was sustained after 24 months.

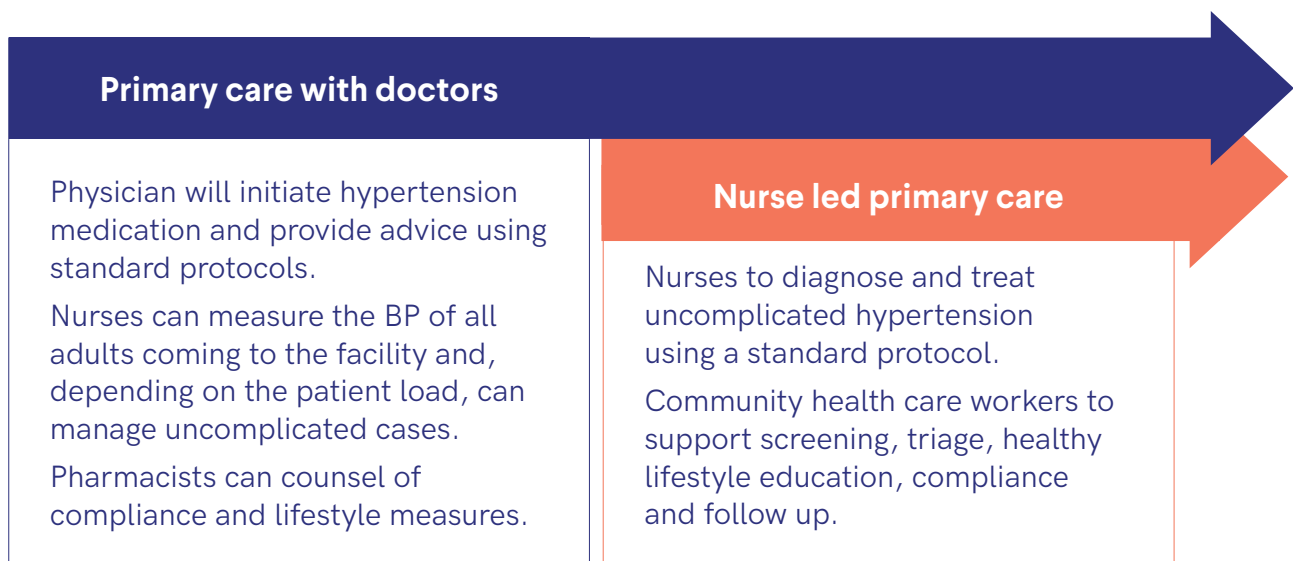


Figure 6: Team-based activities at different types of primary care facilities for hypertension



**6. Design workflow to reflect the new model of care**

Determine new team-based care workflows. Figure 7 shows an example of a workflow in a team-based care scenario. In this scenario, a patient visits a health facility and has their BP measured by a health care worker and a diagnosis made by a clinician. Once a patient is initiated on treatment, they visit either a physician, clinical officer or nurse, who intensifies their treatment if their BP is uncontrolled. Visits are repeated every two to four weeks until their BP is under control. Once a patient’s BP is controlled, they can visit non-physician clinicians for follow-up visits at longer time intervals (e.g., every three months). Medication refills can also be extended (e.g., to three months) for patients with controlled BP. Patients’ BP may fluctuate between controlled and uncontrolled states, which the workflow takes into consideration. This workflow can be altered based on setting and available resources.

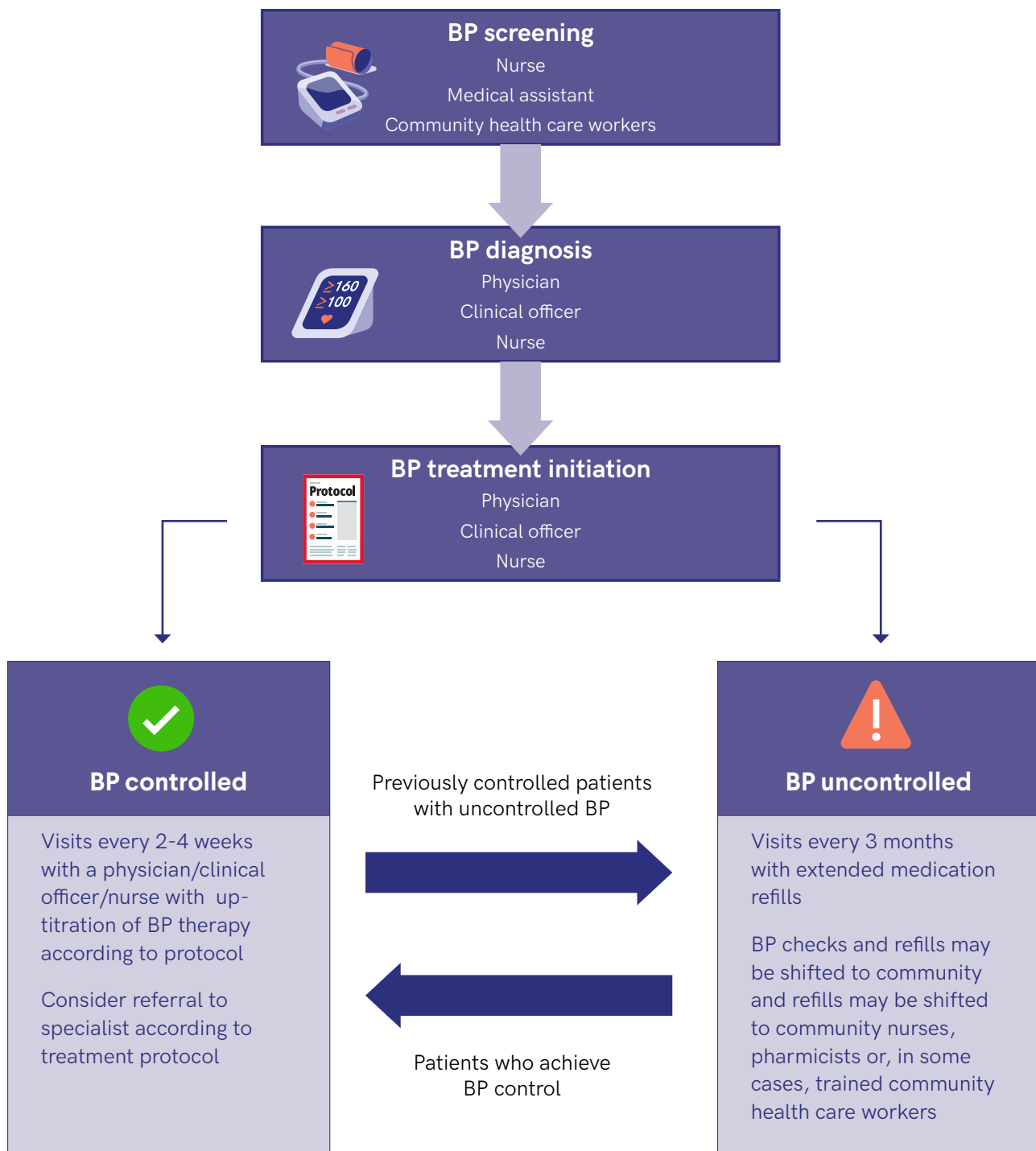


Figure 7: Sample workflow for a blood pressure check and follow-up process

## 7. Monitoring & evaluation of team-based care

Monitoring implementation of team-based care can be done directly through revisiting the team’s distribution of tasks over time. After implementing a new team-based care model, it is also important to monitor health outcomes of patients to ensure that the new team is delivering care effectively.

### MONITORING OF TASK COMPLEXITY AND DISTRIBUTION AMONG HEALTH CARE WORKERS

The team-based care conceptual framework can be practically applied to measure the distribution of tasks within the health care team and to identify how they could be redistributed to increase efficiency.

## TEAM-BASED HYPERTENSION MANAGEMENT IN PRIMARY HEALTH CARE

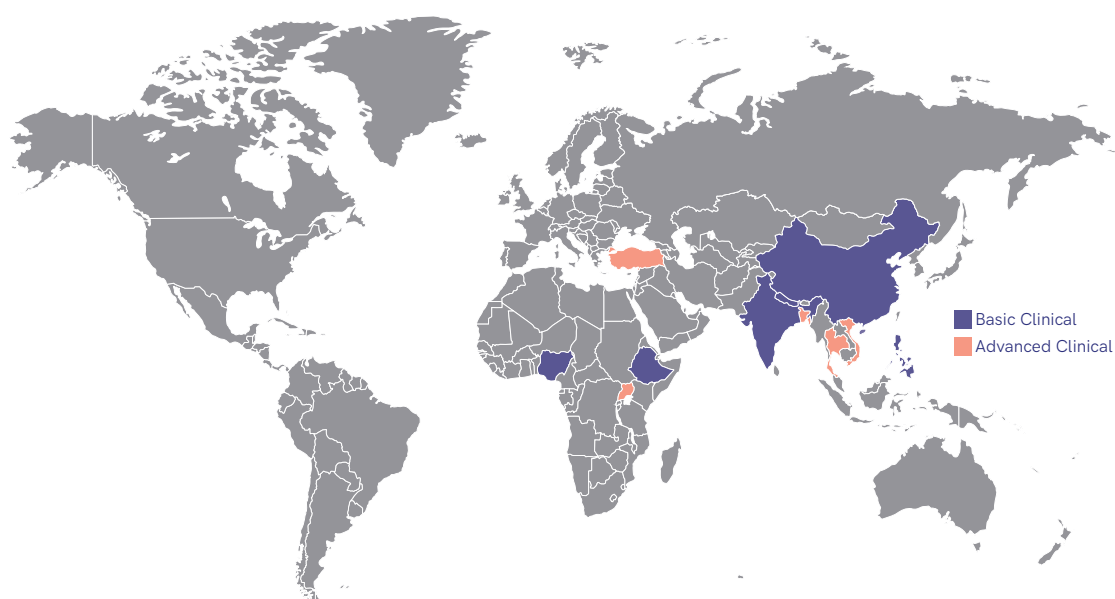
For example, a survey was conducted in 2020 by Resolve to Save Lives and Johns Hopkins University based on the WHO HEARTS Team-based care package tool (Table 3) and the framework in Figure 4. For each low- and middle-income country included in the study, a country representative from Ministry of Health, WHO, or an individual employed by an academic organization, government, health care or public health organization was invited to complete the survey. Questions included what type of health care worker was performing which task in the hypertension program. This allowed ministries of health and program implementers to understand the current health care workforce distribution of their program and to identify how task-sharing could be improved (Figure 8).

Five countries in the survey had non-physicians performing fewer than four basic clinical tasks and in 12 countries, non-physicians were not performing any advanced clinical tasks. Depending on country context, these may provide additional training to non-physician health care workers so that physicians can focus on more complex hypertension cases. This type of survey can be used on an annual basis to monitor changes in task-sharing.

	Highest level of task-sharing complexity	Tasks performed by nurses and/or other health care workers		
		Administrative	Basic Clinical	Advanced Clinical
Bangladesh	Basic Clinical	Scheduling Retrieving patients Registry management	Patient history/CVD risk Measuring BP Refilling meds Counselling	None
Burundi	Advanced Clinical	Scheduling	Patient history/CVD risk Measuring BP Counselling	None
China: Beijing	Advanced Clinical	Scheduling Retrieving patients Registry management	Measuring BP Refilling meds Counselling	Initiating meds Titrating meds Diagnosing
China: Henan	Basic Clinical	Scheduling Retrieving patients Delivering meds Registry management	Patient history/CVD risk Measuring BP Refilling meds Counselling	None
China: Shandong	Advanced Clinical	Scheduling Retrieving patients Delivering meds Registry management	Patient history/CVD risk Measuring BP Refilling meds Counselling	Initiating meds Titrating meds Diagnosing
Ethiopia	Advanced Clinical	Scheduling Retrieving patients Registry management	Patient history/CVD risk Measuring BP Refilling meds Counselling	Initiating meds Titrating meds Diagnosing
India: Kerala	Basic Clinical	Scheduling Retrieving patients Delivering meds Registry management	Patient history/CVD risk Measuring BP	None
India: Maharashtra	Basic Clinical	Scheduling Retrieving patients Registry management	Patient history/CVD risk Measuring BP Refilling meds Counselling	None
India: Madhya Pradesh	Basic Clinical	Scheduling Retrieving patients Delivering meds Registry management	Patient history/CVD risk Measuring BP Refilling meds Counselling	None
India: Punjab	Basic Clinical	Scheduling Retrieving patients Delivering meds Registry management	Patient history/CVD risk Measuring BP Refilling meds Counselling	None

	Highest level of task-sharing complexity	Tasks performed by nurses and/or other health care workers		
		Administrative	Basic Clinical	Advanced Clinical
India: Telangana	Basic Clinical	Scheduling Retrieving patients Delivering meds Registry management	Patient history/CVD risk Measuring BP Refilling meds Counselling	None
Nepal	Advanced Clinical	Registry management	Patient history/CVD risk Refilling meds Measuring BP Counselling	Initiating meds Titrating meds Diagnosing
Nigeria	Advanced Clinical	Scheduling Retrieving patients Delivering meds Registry	Patient history/CVD risk Measuring BP Refilling meds Counselling	None
Philippines	Advanced Clinical	Scheduling Retrieving patients Delivering meds Registry	Patient history/CVD risk Measuring BP Refilling meds Counselling	Initiating meds Titrating meds Diagnosing
Thailand	Basic Clinical	Scheduling Retrieving patients Delivering meds Registry	Measuring BP Refilling meds Counselling	None
Turkey	Basic Clinical	Scheduling Retrieving patients Delivering meds Registry	Patient history/CVD risk Measuring BP Refilling meds Counselling	None
Uganda	Basic Clinical	Registry	Patient history/CVD risk Measuring BP Counselling	Diagnosing
Vietnam	Basic Clinical	Retrieving patients Delivering meds Registry	Patient history/CVD risk Measure BP Refilling meds Counselling	None

**Figure 8:** Task-sharing levels and tasks conducted in practice by nurses and/or other health care worker cadres in selected LMIC hypertension programs

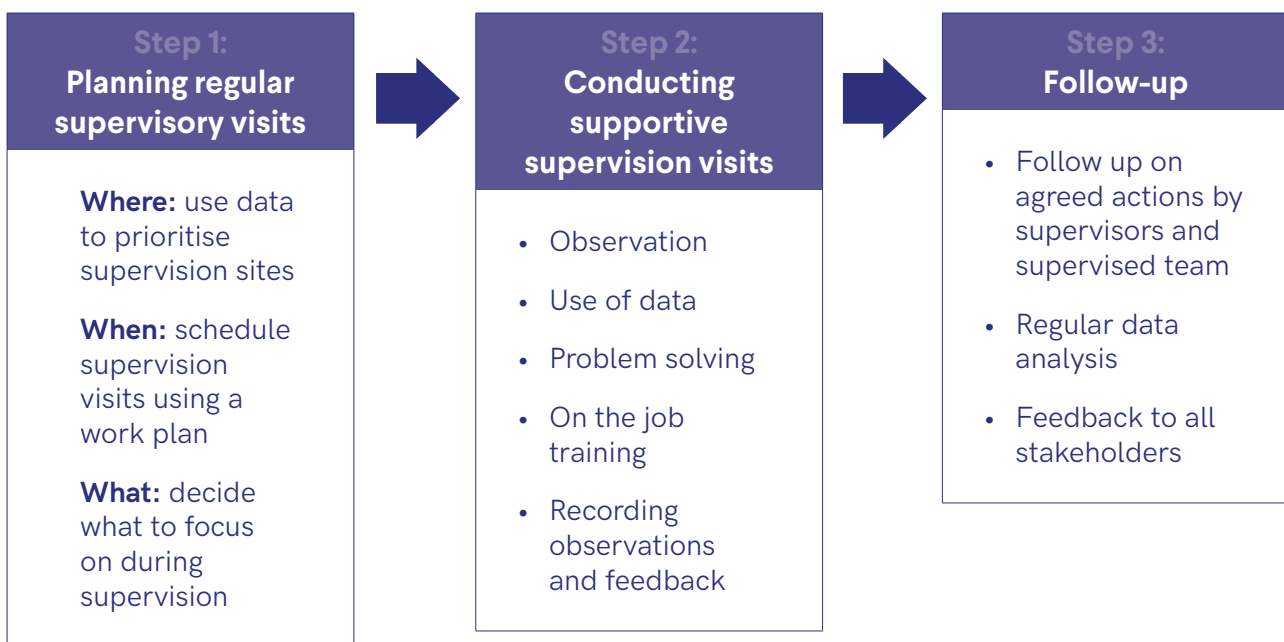


A map representing the highest level of hypertension task-sharing complexity in each of the selected countries. For countries where results were reported for each state of province (i.e., India, China), the map represents the state/province with the highest level of task-sharing complexity.

**SUPPORTIVE SUPERVISION**

Supportive supervision is an important part of monitoring a hypertension program and becomes especially important when transitioning to a team-based care model. Staff may be taking on new responsibilities and will need constructive feedback to refine their new skills and ensure they are providing quality care. A supervisor can create a supportive environment where challenges of team members can be adequately addressed. Team leaders should be empowered to monitor the team’s activities and take corrective action when necessary. This can be done through a periodic review of a sample of patient records through facility visits, which is an effective way to check for data quality and that procedures are being followed by team members. This is part of the continuous quality improvement process and can be done using a treatment supervision form Annex 3 (19). The form can help to identify challenges that staff may be having with their new tasks and constructive feedback can be given on the spot.

Supportive supervision helps health care workers to understand their programmatic data, interpret it in their local context and identify programmatic gaps. As seen in Figure 9, supervision does not just encompass a field visit, but is a continuous cycle of data-driven planning, supervisory visits, and regular follow-up and feedback (20).



**Figure 9:** Supervisory activities conducted in the India Hypertension Control Initiative (20).

Box 6 describes a case study from South Africa where the quality of patient care depended on health care workers having an open and supportive environment. The potential for conflict among the team can be minimized or prevented by frequent meetings with staff members, providing clear and detailed job descriptions, having clear instructions and procedures to follow and creating work schedules that distribute work impartially among team members.

**HYPERTENSION PROGRAM OUTCOMES**

Achievement of program outcomes is an indirect way to measure the success of a team-based approach. Retaining—and improving on— positive clinical outcomes after transitioning to team-based care is a signal that all health care workers are providing services of high quality. Evaluation can be done through a yearly review (with frequency depending on the resources available and necessity). Some examples of program indicators which reflect strong team-based care are:

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li><b>1.</b> Increased patient enrollment</li> <li><b>2.</b> Increased patient treatment rate</li> <li><b>3.</b> Improved BP control rate</li> </ol> | <ol style="list-style-type: none"> <li><b>4.</b> High treatment compliance</li> <li><b>5.</b> Reduction of drugs stock-outs</li> </ol> |
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**Box 6****TASK-SHIFTING TO IMPROVE INTEGRATED CARE FOR CHRONIC DISEASE IN RURAL SOUTH AFRICA (3)****Background**

In rural South Africa, an aging population and the HIV epidemic have increased demand for chronic disease care, creating heavier workloads for staff in public clinics, including those in Mpumalanga province. With shortages in clerical staff, nurses were often responsible for appointment scheduling and pre-appointment retrieval of patient records, on top of their clinical duties.

**Intervention**

To better manage high caseloads, new protocols were designed to streamline care for chronic disease patients in 2019. Nurses trained lay health care workers to take over administrative duties, while nurses focused on the recruitment and clinical management of patients. Lay health care workers were also trained to measure BP, provide counselling, assist nurses in pre-packaging medications, send appointment reminders to patients and follow-up after missed visits. They were paid the same rate as other community health care workers and reported to the clinic manager.

**Lessons Learned**

Lay health care workers can be valuable members of a clinical team and an important resource for managing increased demand in primary health care. By redistributing the workload between nurses and lay health care workers, a task-shifting strategy can relieve the high work burden on nurses, improve clinical outcomes and decrease turnover.

The additional support provided by lay health care workers improved patient care. Compared to clinics that were not receiving this support, clinics employing lay health care workers saw a higher proportion of patients with hypertension attending their appointment on the correct day (70%) than in the control clinics (54%). Task-shifting from nurses to lay health care workers allowed the booking of appointments, prepacking of medications and retrieving of files to occur more frequently, and the wait time for patients in these clinics fell by an hour or more.

In facilities where managers were flexible and acted on suggestions from staff members, the health care team was better able to meet the needs of patients, while health care workers in facilities with limited supervisory support worked at a slower pace and made mistakes more frequently. Additionally, where managers were responsive to changing circumstances and could mitigate tension among staff, facilities were able to meet patient needs. Where managers were not as responsive to change and struggled to manage tensions on staff, this would spill over into interactions with patients. For facilities with a growing demand for care with a high volume of patients and a shortage of staff, task-shifting of certain tasks from nurses to other health care workers can lead to an improvement in the quality of care and create an environment that benefits both workers and patients.

## Conclusion

Team-based care is an effective way to reorganize service delivery to meet the demand of providing long-term health care to a large number of patients with hypertension. Team-based care is based in the primary health care facilities but extends both to hospital and specialty facilities and to the patient's local community. Standardized operating procedures and protocols, quality equipment and technology, strong leadership, and robust health information systems are the enabling conditions that set the stage for successful team-based care.

Expanding and adapting the current roles of health care workers requires an assessment of current staff roles and tasks, legal and regulatory constraints, proper training and certification of health care workers, supportive supervision and carefully chosen incentives. Indicators should be developed for monitoring the desired health care quality outcomes from the team-based care model, through a set of pre-defined indicators.

The team-based care model is only one component of a comprehensive decentralized and patient-centered service delivery model (the differentiated service delivery model). Team-based care is suited for delivering chronic hypertension care; it can also be adapted and applied to a wide range of other chronic diseases.

## Annex 1. Identification of tasks and considerations for the differentiated service delivery model (what/who/where/when) model

Hypertension care task	Definition	Considerations	Possible barriers
Scheduling	Scheduling visits for patients with hypertension	<p>WHAT: Schedule initial and follow-up appointments; send appointment reminders, following up missed visits</p> <p>WHO: Health care workers may differ for scheduling initial appointments and follow-up reminders</p> <p>WHERE: Where do patients follow up and how does this differ according to patient characteristics?</p> <p>WHEN: How frequently do patients follow up and how does this differ according to patient characteristics?</p>	Unavailability of complete patient information
Retrieve patients lost to follow-up	Calling or visiting patients that are lost to follow-up so that they return to care	<p>WHAT: Generate patient line lists to identify patients with hypertension who have not been seen in three months; conduct home visits or follow-up calls</p> <p>WHO: Which health care worker generates line lists, which health care worker conducts visits vs. phone calls?</p> <p>WHERE: Is this done at community level, PHC, hospital and how do those levels communicate?</p> <p>WHEN: How frequently are patients called?</p>	Requires a functional registry
Medication delivery	Delivering medications to a patient's home, or at a location close to a patient's home	<p>WHAT: Deliver medications; arrange transportation for staff member or access to telephone and access to patient contact info</p> <p>WHO: Which health care worker can deliver medications?</p> <p>WHERE: Will delivery be made to the patient's door, or to community location?</p> <p>WHEN: What are length of antihypertension prescriptions; how frequently are deliveries made?</p>	Complicated if cash transactions required
Registry management	Entering new patient information into a registry, and updating it as necessary	<p>WHAT: Paper or electronic-based tracking and updating of patient information; appropriate data entry training</p> <p>WHO: Which health care worker(s) update the registry?</p> <p>WHERE: Is registry updated at each level of care, are these registries connected (e.g. electronically), where is the registry kept in the facility?</p> <p>WHEN: How frequently is the registry updated?</p>	Limited time available for data documentation



TEAM-BASED HYPERTENSION MANAGEMENT IN PRIMARY HEALTH CARE

Hypertension care task	Definition	Considerations	Possible barriers
Taking patient history/Assessing CVD risk	Using a checklist to ask about and document an individual's medical history and/or assessing the CVD risk of a patient	<p>WHAT: Collect vitals, update medication list; assess medical history, allergies and social history; train in risk assessment and on use of checklist</p> <p>WHO: Which health care worker performs different tasks?</p> <p>WHERE: Is this activity performed in the waiting room, another group setting or in the consultation room?</p> <p>WHEN: How often is this assessment or specific tasks done?</p>	Lack of time, knowledge and skills
Blood pressure measurement	Taking an individual's BP using an automated device for screening or monitoring purposes	<p>WHAT: Train in proper technique; use appropriate device; perform BP measurement</p> <p>WHO: Which health care worker performs BP for screening and/or diagnosis</p> <p>WHERE: Can BP screening be performed at the community, PHC or hospital level; is done upon entry into the facility or in an NCD corner?</p> <p>WHEN: How frequently is BP monitoring done for each patient?</p>	Lack of validated BP monitors, bad habits, lack of training
Refill medications	Refilling prescriptions of an existing patient with hypertension without changing the dosage or type of medications	<p>WHAT: Refill medications</p> <p>WHO: Which health care worker refills medications; which health care workers need supervision and by whom?</p> <p>WHERE: Is this done in community level, at PHC, hospital, pharmacy; can telemedicine be used?</p> <p>WHEN: What are prescription lengths; how does this differ according to patient characteristics (e.g. controlled patient vs. not controlled)</p>	Legal and licensing barriers; resistance from physicians
Counselling patients	Counselling a patient and assessing adherence to medication. Counselling includes education on hypertension, medication adherence, lifestyle advice (e.g. nutrition, exercise).	<p>WHAT: Includes preparing educational materials for upcoming patient appointments, motivational counseling, use of e-reminders, exercise, and diet plans.</p> <p>WHO: Which health care workers perform counselling, or is this done by peer counsellors?</p> <p>WHERE: What level of care does this occur at, is this done in a facility or in the community, is this individual or group counselling?</p> <p>WHEN: How often is counselling given?</p>	Adherence counselling requires a reliable supply of affordable medication
Diagnosing hypertension	Diagnosing hypertension based on BP measurements/ clinical exam	<p>WHAT: Diagnose hypertension according to country national guidelines</p> <p>WHO: Which health care worker performs diagnosis; which health care workers need supervision and by whom?</p> <p>WHERE: Can diagnosis be done at the community, PHC or hospital level; where in facility is this done; can telemedicine be used?</p> <p>WHEN: Over how many visits is this done; what is the time interval between visits?</p>	Legal and licensing barriers; resistance from physicians

TEAM-BASED HYPERTENSION MANAGEMENT IN PRIMARY HEALTH CARE

Hypertension care task	Definition	Considerations	Possible barriers
Initiating treatment	Starting a patient on antihypertensive medication following the diagnoses of hypertension based on a protocol	<p>WHAT: To initiate treatment by following guidance of a standardized treatment protocol</p> <p>WHO: Which health care worker starts a patient on treatment; which health care workers need supervision and by whom?</p> <p>WHERE: What type of facility and what level of care; can telemedicine be used?</p> <p>WHEN: How long after diagnosis will patient begin treatment?</p>	Legal and licensing barriers; resistance from physicians
Titration Treatment	Adjusting a patient's dosage of antihypertensive medication based on a treatment protocol	<p>WHAT: Titration treatment by following guidance of a standardized treatment protocol</p> <p>WHO: Which health care worker adjusts dosage of medication; which health care workers need supervision and by whom?</p> <p>WHERE: What type of facility and level of care; can telemedicine be used?</p> <p>WHEN: How often is patient followed up to assess if dose adjustment needed?</p>	Legal and licensing barriers; resistance from physicians

## Annex 2: Classification of health care workers (21)

Occupation group	Examples of occupations	Qualification
Specialist medical practitioners *	Specialist physician (internal medicine), Surgeon, Anaesthetist, Cardiologist, Emergency medicine specialist, Ophthalmologist, Preventive medicine specialist, Psychiatrist.	Occupations included in this category require completion of a university-level degree in basic medical education plus postgraduate clinical training in a medical specialization (except general practice) or equivalent.
Generalist medical practitioners	Medical doctor (general), Medical officer (general), Physician (general), General practitioner, Family medical practitioner, Primary health care physician, District medical doctor, Resident medical officer specializing in general practice	Occupations included in this category require completion of a university-level degree in basic medical education plus postgraduate clinical training or equivalent.
Nursing professionals	Professional nurse, Specialist nurse, Nurse practitioner, Clinical nurse, District nurse, Operating theatre nurse, Public health nurse, Nurse anaesthetist, Nurse educator	This category includes occupations for which competent performance usually requires formal training at a higher educational institution in nursing.
Traditional and complementary medicine professionals	Acupuncturist, Ayurvedic practitioner, Chinese herbal medicine practitioner, Homeopath, Naturopath, Unani practitioner	This category includes occupations for which competent performance requires an extensive understanding of the benefits and applications of traditional and complementary therapies.
Paramedical practitioners	Clinical officer, Primary care paramedic, Advanced care paramedic, Surgical technician	Occupations included in this category normally require completion of tertiary-level training in theoretical and practical medical services.
Pharmacists	Hospital pharmacist, Industrial pharmacist, Retail pharmacist, Dispensing chemist	Occupations included in this category normally require completion of university-level training in theoretical and practical pharmacy, pharmaceutical chemistry, or a related field.
Physiotherapists	Physiotherapist, Geriatric physical therapist, Orthopaedic physical therapist, Paediatric physical therapist	This category includes occupations for which competent performance usually requires formal training at a higher educational institution in physiotherapy or a related field.
Dietitians and nutritionists	Dietician, Clinical dietician, Food service dietician, Nutritionist, Public health nutritionist, Sports nutritionist	This category includes occupations for which competent performance usually requires formal training at a higher educational institution in food and nutritional science, nutrition education, dietetics, or a related field.
Social work and counselling professionals	Addictions counsellor, Bereavement counsellor, Clinical social worker, District social welfare officer, Sexual assault counsellor, Women's welfare organizer	This category includes occupations for which higher educational institution in social work and counselling for a period of 3–6 years.

TEAM-BASED HYPERTENSION MANAGEMENT IN PRIMARY HEALTH CARE

<p>Medical records and health information technicians</p>	<p>Medical records technician, Health information clerk, Medical records analyst, Medical records unit supervisor, Clinical coder, Disease registry technician</p>	<p>Occupations included in this category require knowledge of medical terminology, legal aspects of health information, health data standards, and computer- or paper-based data management.</p>
<p>Community health care workers</p>	<p>Community health care worker, Community health aide, Community health care promoter, Village health care worker</p>	<p>Occupations included in this category normally require formal or informal training and supervision recognized by the health and social services authorities.</p>

## Annex 3: Example of treatment supervision/audit form (19)

TREATMENT SUPERVISION/AUDIT FORM		
Facility Name:	District Name:	Date:
Name of supervisor:	Name of medical officer:	
Has the facility started the hypertension treatment programme? Circle, as appropriate:		Y N NA
N°	Indicator	Circle Any
1	Screening and BP measurement	
1.1	Is opportunistic screening done for all adults?	Y N
1.2	Is the BP measurement protocol displayed on the wall/desk?	Y N NA
1.3	Is there at least one functioning BP instrument in the facility?	Y N NA
1.4	Are all patients with BP $\geq 140/90$ referred to the medical officer for treatment?	Y N NA
1.5	For how many patients was BP measured correctly? (Observe 5, $>2$ of each staff who measure BP)	1 2 3 4 5
2	Treatment	
2.1	Is the treatment algorithm displayed on the wall/desk?	Y N NA
	Randomly audit 10 patient treatment cards (see Patient card audit form). Write for what proportion of patients:	Proportion
2.2	BP was recorded at every visit for the last three visits	
2.3	Initial antihypertensive medication was given as per protocol	
2.4	Medication was intensified or added as per protocol if BP $\geq 140/90$ (write NA if not applicable)	
2.5	Aspirin was given if patient had prior CVD (write NA if not applicable)	
2.6	Statin was given if patient $>40$ yrs with diabetes or if patient had prior CVD (NA if not applicable)	
2.7	Referral to a specialist was made if BP $\geq 140/90$ after treating with three drugs (NA if not applicable)	
2.8	BP was $<140/90$ at last visit	
3	Counselling and follow-up	
3.1	Is there a staff assigned for patient counselling?	Y N NA
3.2	Are patient counselling tools/materials available?	Y N NA
3.3	Is there a system for counselling patients individually or as a group?	Y N NA
3.4	Is there a system for tracking initial defaulters?	Y N NA
3.5	Is there a functional system for patient reminder and follow-up?	Y N NA
4	Service delivery. Interview 5 patients and validate (see Patient interview report card). Circle number of positive responses	
4.1	Was BP measured at every visit?	1 2 3 4 5
4.2	Did the patient receive all prescribed medication at this visit?	1 2 3 4 5
4.3	Did the patient ever have to pay for medication in the past?	1 2 3 4 5
4.4	Does the patient have correct understanding of how to take medication?	1 2 3 4 5
4.5	Does the patient know his/her BP reading at this visit?	1 2 3 4 5
4.6	Does the patient know the target BP?	1 2 3 4 5
5	Drug inventory system	
5.1	Is there a functioning drug inventory system in place?	Y N NA
5.2	Was there a stock-out of core drugs in the past quarter?	Y N NA
5.3	If there was a stock-out this quarter, which drugs were not available?	Y N NA
5.4	Is there enough buffer stock of core drugs for the next quarter?	Y N NA
6	Patient recording and reporting system	
6.1	Is there a functioning recording and reporting system in place?	Y N NA
6.2	Are there sufficient patient cards for next three months?	Y N NA
6.3	Is the facility register for follow-up available?	Y N NA
6.4	Is there a place to arrange/store patient cards?	Y N NA
6.5	Are the cards organized by serial number or other system so easily retrievable	Y N NA
6.6	Was last quarter's report sent on time?	Y N NA
6.7	Does the clinic in charge know the percentage of patients with BP $<140/90$ at the facility?	Y N NA
6.8	Was last quarter's 6-month BP control rate reported accurately? (check register from last quarter)	Y N NA

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