

Effective Diagnosis, Treatment, and Monitoring of Hypertension in Primary Care

Participant Guide

3

Treatment of Hypertension

Content **should** be adapted with country-specific information prior to use.
Red text denotes places where modification may be required. Guidance on
how to adapt the training is provided in the Course Overview

Expected competency on completion of session:

Ability to treat patients with hypertension using standardized protocol, follow-up for adherence to treatment, and manage associated co-morbidities to achieve target blood pressure (BP) control.

Target users:

Health care providers

Facility managers

District supervisors

In this session, you will gain knowledge on:

- Essential BP treatment components
- Who should receive treatment for high BP
- Medications used for treating hypertension
- BP treatment targets
- Special considerations
- Compliance with long-term clinic follow-up and medication adherence.

3.1 Hypertension treatment

Hypertension treatment and management can be successful, if it is:

- **Available** as needed
- **Affordable by all** patients, in terms of access to clinics and cost/availability of medication
- **Adjustable** to allow for practical and feasible implementation in primary health care clinics.

3.2 Essential treatment components

There are five essential treatment components to a successful treatment approach:

1. Adoption of simple and detailed **protocols**
2. Establishment of operational procedures that enable **task-sharing** and streamline the patient approach
3. Regular and uninterrupted supply of **medications** that ensure uninterrupted treatment
4. **Patient-centered services** that reduce barriers to adherence and facilitate better communication
5. An information system that allows **real-time feedback** to facilitate continuous programme improvement.

3.3 Who should be screened?

Many people with hypertension may not be diagnosed because:

- Individuals with elevated BP often do not present with any symptoms
- They have never been tested.

It is therefore important to:

- Screen all adults ≥ 18 years old for elevated BP
- Repeat screening at least one week later if BP is elevated
[Include definitions based on country guidelines/protocol]
- **Provide lifestyle counselling for patients with BP of SBP 130-139 mmHg and/or DBP 80-89 mmHg who do not have other CVD risk factors**
- Start pharmacological treatment for patients with elevated BP after diagnosis confirmation at follow-up visit.

KEY POINT

Pharmacologically treat all individuals whose BP is ≥ 140 mmHg and/or ≥ 90 mmHg after diagnosis confirmation at follow-up visit.

3.4 Available medications for treating hypertension

There are three main classes of medication that are usually in the first line of treatment for hypertension:

1. Calcium Channel Blockers (CCB)
2. Angiotensin Converting Enzyme inhibitors (ACE inhibitors or ACE-I) and Angiotensin Receptor Blockers (ARBs)
3. Diuretics.

Other classes, such as vasodilators, centrally acting agents, and beta blockers, can also be considered in particular cases. It is important to be familiar with and to consider the side effects of different medications in order to make informed decisions and recognize side effects in follow up.

Medications used for treatment of hypertension

[NAME OF DRUG]: Calcium channel blocker (CCB)

- Dose: [NUMBER] mg once a day*
- Common adverse effects: Ankle oedema
- Metabolic monitoring not required.

[NAME OF DRUG]: Angiotensin converting enzyme inhibitor (ACE-I)

- Dose: [NUMBER] mg once a day*
- **Use in special patients:** Should **not** be given to women who are or may become pregnant.
- Common side effects: Cough
- Before initiating, and several weeks after increasing dose, consider checking serum creatinine and potassium, especially in people at high risk for renal injury and/or hyperkalaemia (for example individuals with advanced age, chronic kidney disease (CKD), atherosclerotic cardiovascular disease (ASCVD), or at high risk for ASCVD).

[NAME OF DRUG]: Angiotensin receptor blockers (ARB)

- Dose: [NUMBER] mg once a day*
- **Use in special patients:** Should **not** be given to women who are or may become pregnant.
- Before initiating, and several weeks after increasing dose, consider checking serum creatinine and potassium, especially in people at high risk for renal injury and/or hyperkalaemia (for example individuals with advanced age, CKD, ASCVD, or at high risk for ASCVD).

*Doses mentioned are “usual starting dose” and “usual intensification dose”

[NAME OF DRUG]: Thiazide-like diuretic

- Dose: [NUMBER] mg once a day*
- **Use in special patients:** Should **not** be given to women who are or may become pregnant.
- Common side effects: hypokalaemia, can aggravate gout
- Before initiating, and several weeks after increasing dose, consider checking serum creatinine and potassium, especially in people at high risk for renal injury (for example individuals with advanced age, CKD, ASCVD, or at high risk for ASCVD).

In addition to the above antihypertensive medications, the medicines given below are being used in specific cases:

- **Beta blocker:** Beta blockers are not recommended as first line therapy. Dosage varies based on specific medicine. If a heart attack has been diagnosed within the previous three years, or there is atrial fibrillation or heart failure, then a beta blocker should be added to the starting dose of antihypertensive medication. Patients with angina may also benefit from treatment with a beta blocker.
- **Low-dose aspirin:** [NUMBER] mg aspirin once a day is recommended to be given to patients with any history of heart attack or stroke.
- **Statin:** [NUMBER] mg is recommended in patients with any history of heart attack or stroke.
 - **Use in special patients:** Should **not** be given to women who are or may become pregnant.

*Doses mentioned are “usual starting dose” and “usual intensification dose”

Drug selection

General principles for selection of drugs are:

- Most people need two or more classes of BP medications to reach target
- Two medications of same class are not advisable
- Taking ACE-Is and ARBs together is not advisable
- Reach intensification dose of first agent before starting another class.

Based on these considerations, the Global Hearts Initiative’s HEARTS technical package contains sample hypertension protocols that are available for governments to choose or adapt according to their needs. In [COUNTRY], states have adapted these protocols by consensus of experts.

States follow their respective state-specific, standardized protocols based on the above-mentioned medications.

3.5 Use a standardized protocol

The ability to rigorously follow a national, standardized hypertension protocol is an important step to achieve a target BP control. It also:

- Reduces clinical variability
- Enables the health care team to guide patients safely and efficiently towards the target BP goal
- Sends a strong signal that hypertension control is a priority.

A standardized protocol will result in a more efficient and cost-effective selection of medications and treatment approaches and introduces simplicity in the management of care. Protocols can be incorporated into electronic health records, where available, and through clinical decision-support tools, registries, and quality improvement measurements.

The standardized protocol, described in this section, is evidence-based and has been developed by a select group of global hypertension experts. This standardized protocol has been endorsed by the [COUNTRY] government.

This protocol will be the basis for quantification of drug requirements in [COUNTRY/STATE]. It will also serve as a standardized reference tool for clinical prescription, basic and in-service trainings on hypertension management, and evaluation of quality of care and its impact.

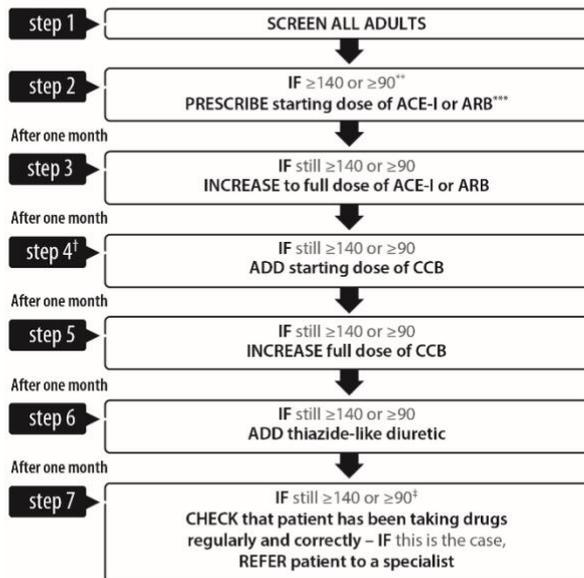
KEY POINT

The goal of the treatment regimen is to bring systolic BP to <140 mmHg and diastolic BP to <90 mmHg.

3.5.1 [COUNTRY/STATE] protocol

[Example from India provided below. Replace with endorsed protocol.]

HYPERTENSION PROTOCOL ACE-I or ARB* as first-line treatment



PROVISION FOR SPECIFIC PATIENTS

► **THIS PROTOCOL IS CONTRAINDICATED FOR WOMEN WHO ARE OR COULD BECOME PREGNANT.**

- Manage diabetes as indicated by national protocol.
- Aim for BP <130/80 for people at high risk, such as individuals with diabetes, CAD, stroke, or CKD.

LIFESTYLE MANAGEMENT ADVICE FOR ALL PATIENTS

- Stop all tobacco use, avoid secondhand tobacco smoke.
- Drink no more than two units of alcohol per day and do not drink on at least two days of the week.
- Increase physical activity to equivalent of brisk walk 150 minutes per week.
- If overweight, lose weight.
- Eat heart-healthy diet:
 - Eat a low-salt diet.
 - Eat ≥5 servings of vegetables/fruit per day.
 - Use healthy oils (e.g. olive, safflower).
 - Eat nuts, legumes, whole grains and foods rich in potassium.
 - Limit red meat to once or twice a week at most.
 - Eat fish or other food rich in omega 3 fatty acids (e.g., flax seeds) at least twice a week.
 - Avoid added sugar from cakes, cookies, sweets, fizzy drinks and juice.

DRUGS AND DOSES[§]

Class	Medication	Starting dose	Intensification dose
ACE inhibitor [§] (angiotensin-converting-enzyme inhibitor)	lisinopril	20 mg	40 mg
	ramipril	5 mg	10 mg
	perindopril	4–5 mg	8–10 mg
ARB [§]	losartan	50 mg	100 mg
	telmisartan	40 mg	80 mg
diuretic [§] thiazide-like	chlorthalidone [§] or indapamide SR [§]	12.5 mg	25 mg
		1.5 mg	stay at 1.5 mg
CCB (calcium channel blocker)	amlodipine	5 mg	10 mg

* ACE-I or ARB according to local guidelines/costs/intolerance to ACE-I. ACE-Inhibitors cause chronic cough in approximately 10% of patients. Neither ACE-I nor ARBs should be given to pregnant women.

** Or other BP target, as determined by clinical factors. If BP ≥160 or ≥100, start same day. If 140–159 or 90–100, check on a different day and if still elevated, start.

*** Consider statin use.

† Consider optional switch of steps 4 and 5 (CCB) with step 6 (thiazide-like diuretic).

‡ Consider increase to intensification dose diuretic. Hypokalaemia more common using intensification dose diuretic – consider increased lab monitoring.

§ These are suggested examples of medications based on scientific evidence, once-daily suitability, common usage, and availability.

§ Before initiating and several weeks after starting ACE-Is, ARBs or diuretics, consider checking serum creatinine and potassium.

¶ If neither diuretic agent is available, hydrochlorothiazide can be used (25 mg starting, 50 mg full) or indapamide (1.25 mg starting, 2.5 mg full) can be used.

3.5.2 Protocol steps

[Example text from India provided below. Replace with text relevant to the endorsed protocol.]

Step 1: Measure BP of all adults (age >18 years) visiting the health facility.

- If systolic BP (SBP) is ≥ 140 or the diastolic BP (DBP) is ≥ 90 , repeat measurement of BP to establish the diagnosis, and antihypertensive therapy should be started as per standardized protocol.
- The target BP to be achieved is $<140/90$.

Step 2: The medical officer should initiate treatment with amlodipine 5 mg and schedule patient for a follow-up visit after one month.

- During the follow-up visit measure BP, assess treatment adherence and any side effects.
- If BP is $<140/90$ during the follow-up visit, the same treatment is continued and monthly follow-up visits are scheduled.

Step 3: If BP is above target value during the monthly review, the medical officer should increase the dose of amlodipine to 10 mg and schedule patient for a follow-up visit after one month.

- During the follow-up visit measure BP, assess treatment adherence and any side effects.
- If BP is $<140/90$ during the follow-up visit, the same treatment is continued and monthly follow-up visits are scheduled.

Step 4: If BP is above target value during the monthly review, the medical officer should add telmisartan 40 mg as a second medication and schedule patient for a follow-up visit after one month.

- During the follow-up visit measure BP, assess treatment adherence and any side effects.
- If BP is $<140/90$ during the follow-up visit, the same treatment is continued and monthly follow-up visits are scheduled.

Step 5: If BP is above target value during the monthly review, the medical officer should increase the dose of telmisartan to 80 mg and schedule patient for a follow-up visit after one month.

- During the follow-up visit, measure BP, assess treatment adherence and any side effects.
- If BP is $<140/90$ during the follow-up visit, the same treatment is continued and monthly follow-up visits are scheduled.

Step 6: If BP is above target value during the monthly review, the medical officer should add chlorthalidone 12.5 mg as a third medication and schedule patient for a follow-up visit after one month. If chlorthalidone is not available, the medical officer can prescribe hydrochlorothiazide 25 mg.

- During the follow-up visit measure BP, assess treatment adherence and any side effects.
- If BP is <140/90 during the follow-up visit, the same treatment is continued and monthly follow-up visits are scheduled.

Step 7: If BP is above target value during the monthly review, the medical officer should increase the dose of chlorthalidone to 25 mg and schedule patient for a follow-up visit after one month. If chlorthalidone is not available, the medical officer can prescribe hydrochlorothiazide 50 mg.

- During the follow-up visit measure BP, assess treatment adherence and any side effects.
- If BP is <140/90 during the follow-up visit, the same treatment is continued and monthly follow-up visits are scheduled.

Step 8: If BP is above target value during the monthly review, make sure that the patient has been taking medications regularly and correctly. If, in spite of taking medicines regularly and correctly, the BP is not <140/90, then refer the patient to a specialist. [End of inserted text from India]

3.5.3 Consideration for specific patients

PROVISION FOR SPECIFIC PATIENTS	PROVISION FOR SPECIFIC PATIENTS
<p>▶ THIS PROTOCOL IS CONTRAINDICATED FOR WOMEN WHO ARE OR COULD BECOME PREGNANT.</p> <ul style="list-style-type: none"> • Manage diabetes as indicated by national protocol. • Aim for BP <130/80 for people at high risk, such as individuals with diabetes, CAD, stroke, or CKD. 	<ul style="list-style-type: none"> • Manage diabetes as indicated by national protocol. • Aim for BP <130/80 for people at high risk, such as individuals with diabetes, CAD, stroke, or CKD. <p>People with history of atrial fibrillation or heart failure and cerebrovascular disease:</p> <ul style="list-style-type: none"> • Add beta blocker with initial treatment

When we apply any protocol, we need to take into consideration special provisions for certain patient groups. Adjustments can be made to address the needs of these patients, for example:

- ACE inhibitors, ARBs, and thiazide/thiazide-like diuretics should **not** be given to pregnant women. Women of childbearing potential should be on highly effective contraception when prescribed these medications.
- Diabetes protocol should be followed for diabetic patients.
- Addition of a beta blocker daily with amlodipine should be considered if patient has had a heart attack in the previous three years.

- Initiation of a low dose of aspirin is recommended if patient has any history of heart attack or stroke.
- If the protocol is followed but the BP of a patient is not lowered according to the guidelines, make sure that the patient is taking the medication regularly and as prescribed. If this is confirmed, consider referring the patient to a specialist for further evaluation.

3.5.4 Lifestyle management advice

Any protocol implementation should be accompanied by healthy lifestyle choices. Nonpharmacological treatment (lifestyle modification or management) should be strongly encouraged and will complement pharmacological treatment and enhance overall health. Practical advice is as follows:

- Advise all patients to avoid tobacco use and limit alcohol intake.
- Suggest ways for patients to increase physical activity, improving overall health and weight control.
- Discuss modifications for a healthy diet – reduce salt intake, use healthy oils, increase fruit and vegetable intake, limit red meat, choose fish and foods rich in omega 3 fatty acids, avoid added sugar, and limit consumption of fried foods, processed foods and foods high in saturated fat.

3.5.5 Treatment continuation by non-physician health staff

[Example text from India provided below. Replace with country-specific text.]

The initiation of treatment and the increase in dose or addition of a new medicine is by the medical officer. Thus, until BP reaches the target value the patient will continue to follow-up with the medical officer. Thereafter, the patient can be under the care of non-physician health staff of the nearest sub-centre for monthly follow-up visits. The non-physician health staff should measure BP and check for adherence to therapy at each monthly visit. If BP is controlled, the non-physician health staff can provide drugs, which the patient was already taking, for one month. If BP is above target value or any side effects are noticed during any monthly visit, the patient should be referred to the medical officer.



EXERCISE 1: CASE SCENARIOS: TREATMENT OF HYPERTENSION

Complete this exercise in a small group or as an individual, as instructed by your facilitator.

1. Read the assigned case scenario and answer the questions presented.
2. When all groups have completed the task, the facilitator will lead a review of the responses.

Case 1

A 55-year-old man has been found to have a BP reading of 172/104.

1. How should the doctor manage this patient? (Work through your country's protocol.)
2. He was started on [NUMBER] mg [CALCIUM CHANNEL BLOCKER]. During monthly follow-up, BP continues to be 152/94. How would you manage this patient?

Case 2

A patient previously diagnosed with hypertension comes to the primary health clinic to see the doctor. He is 70 years old. He asks for [SPECIFIC ACE INHIBITOR] and says he takes it regularly. The doctor measures his BP and finds it is 132/84. However, [SPECIFIC ACE INHIBITOR] is not in the drug protocol of the [COUNTRY/STATE].

1. What should the doctor advise if patient's BP is 132/84?
2. What should the doctor advise if patient's BP is 162/102?

Case 3

A patient previously diagnosed with hypertension comes to the primary health clinic to see the doctor. She is 60 years old, a non-smoker and her blood pressure is 152/86. She is on **atenolol 50 mg od**. She does not have any history of heart attack.

1. What advice should the doctor give?

Case 4

A 40-year-old patient known to have diabetes comes to the doctor and is found to have a blood pressure of 152/96. She has an old record from four months ago that shows a blood pressure of 144/92. She is not on any treatment.

1. Should any investigations be done for her before starting treatment?
2. What medications should she be started on?
3. What other history should the doctor elicit?

Case 5

A 65-year-old woman is on 10 mg of amlodipine. Her BP is 136/87. During the follow-up visit, the doctor examines her ankles to see how her pedal oedema is doing.

1. How should the doctor manage this patient?

3.6 Ensuring adherence to medications

To promote adherence, the health system has adopted the following strategies:

1. Standardized protocol
2. [STRATEGY 2]
3. [STRATEGY 3, etc.]

Additionally, patients should be counselled on the diagnosis and required treatment:

- Ensure the patient understands the diagnosis and the need for life-long treatment.
- Explain the difference between medication for long-term control (e.g. of BP) and medication for quick relief (such as for headaches).
- Explain the damage to target organs if medication is not taken regularly.
- Teach the patient how to take the medication at home.
 - Show the patient the appropriate dose.
 - Explain how many times a day the patient should take the medication and at what time.
 - Explain how you have labelled and packaged the tablets.
 - Check the patient's understanding before the patient leaves the health centre.
- Explain the importance of keeping a sufficient supply of medication at home until the next visit to the health facility.
- Explain the importance of taking the medication regularly as advised, even if there are no symptoms.
- Explain potential adverse effects of the medication and what to do.

Address the need for patient reminders:

- Encourage patients to use medication reminders, such as alarms or smartphone applications.
- Implement patient reminder systems, such as e-mail, phone calls, or text messages, where possible, to ensure patients adhere to their medication regimen.

Physicians can help to increase a patient's motivation by:

- Facilitating a good patient–healthcare provider relationship
- Providing positive feedback (i.e., praise adherence through positive feedback)
- Ensuring an uninterrupted supply of medication at the health facility so that drugs are available for the patient at each visit.



EXERCISE 2: DISCUSSION: DRUG SELECTION CONSIDERATIONS

Discuss the following questions:

- How important is the choice of individual drugs in a drug class (i.e., Lisinopril v. Ramipril for ACE-I)?
- Why are beta blockers not included as a first- or second-line treatment, except for those who just had a heart attack?
- What is the risk of hypokalaemia among patients receiving a diuretic?



EXERCISE 3: ROLE PLAY EXERCISE: ADHERENCE TO TREATMENT

The facilitator will ask for two volunteers to act out this scene in front of the group.

Role 1: *A patient who was diagnosed as having hypertension 6 months ago and was initiated on treatment. He/she has no symptoms and has inconsistently taken medication. BP is 150/102.*

Role 2: *A health care provider who needs to elicit the patient's history of taking medication and convince the patient to be consistent.*

Sources

- HEARTS technical package: Access to medications module. Geneva: World Health Organization; 2016.
- HEARTS technical package: Evidence-based protocol module. Geneva: World Health Organization; 2016.