IHCI India Hypertension Control Initiative

Guide for Pharmacists

What is hypertension?

Hypertension, or high blood pressure (BP), is when either systolic BP (the top number) is '140 mmHg or more' or diastolic BP (the bottom number) is '90 mmHg or more'.

Why is hypertension dangerous?

High BP harms the heart, brain, arteries, kidneys, and blood vessels, and can cause lifelong disability and death. If not controlled, high BP can cause heart attack, stroke, and kidney failure. Hypertension has no symptoms and can affect people of all ages.

Government's efforts to control hypertension

The National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) aims to control these diseases through better care delivery in primary health care settings. The India Hypertension Control Initiative (IHCI) focuses on the strengthening of hypertension management and monitoring at the primary health care level.

Problem of hypertension in India

One in four of Indian adults has high BP

Out of them, only one in two know they have high blood pressure

Out of them, only one in ten have blood pressure under control

As a result, a large number of people develop heart attacks, strokes, and kidney failure while in the productive years of life

There are five steps needed to effectively control blood pressure

1. Implement practical treatment protocols

which are drug- and dose-specific and which establish steps to take if blood pressure is not controlled.
Use of standardized, evidence-based protocols reduces clinical variability, and results in more efficient and cost-effective selection of medications and treatment approaches.

2. Regular and uninterrupted supply of medications and equipment

to ensure that the right medications and equipment get to the right place at the right time, and reach the patients who need them.

3. Team-based care and task sharing

to involve nurses, health workers, and ASHAs for counseling and follow up of the patients and to improve adherence to treatment.

4. Patient-centred services

reduce barriers to care by increasing the convenience of medical visits and refills at Health & Wellness Centres and other primary health care facilities, and improving access to BP monitoring.

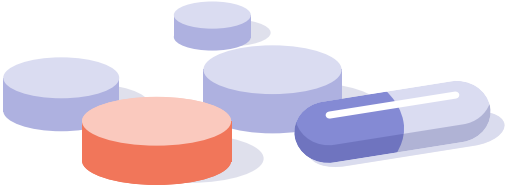
5. Information systems that allow continuous, real-time monitoring

to improve follow-up of patients whose blood pressure is not under control, measure program quality and coverage, and allow analysis of program data to improve patient care and system performance.

Role of Pharmacists

MAINTAINING DRUG STOCK

- Forecast annual drug requirement in coordination with Medical Officer
- Maintain adequate quantities of drug stocks through timely and appropriate indenting
- Maintain quality of drugs: follow good storage practice and do visual verification of drug quality periodically
- Monitor stock position monthly at all dependent health facilities/HWCs/sub-centres and ensure adequate refilling based on total patient registered. (Use ready reckoner)



DRUG DISPENSING

- Dispense at least 30 days drugs (or as directed in prescription) to all patients with appropriate counselling
- Update 'issue to patient' and 'daily consumption' (Annexure A) records at drug dispensing counter

RECORDING AND REPORTING

- Update all records related to receipt and issue of drugs, both in LMIS software & physical records
- Maintain a hypertension patient tracker at DDC (Annexure B) as this ensures that all the patients taking anti-hypertensives are registered and tracks their medication regularity
- Submit reports related to previous month consumption and stock on hand of protocol drugs to district program officers at monthly intervals.

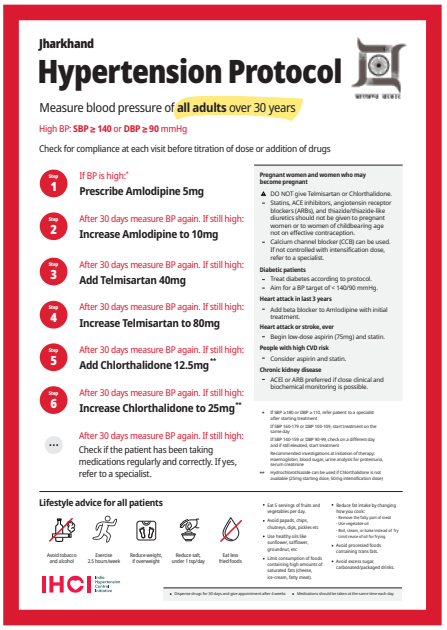
AWARENESS GENERATION

- Support and participate in NCD related awareness activities at health facility and community

Hypertension Treatment

- Early treatment and control of high BP are essential to prevent target organ damage. Treatment should be initiated even if the patient is asymptomatic; in fact, most patients will not have any symptoms.
- The State hypertension treatment protocol is based on global guidelines and has been finalized after consultations with National and State-level experts and is endorsed by the State government.
- Amlodipine, Telmisartan/Enalapril and Chlorthalidone/Hydrochlorothiazide are the medications of choice in the standardized treatment protocols being followed in most States.
- The protocol defines drug- and dose-specific steps to achieve treatment goals. Adoption of standardized protocol reduces unwarranted clinical variability and facilitates better procurement and logistics management as the number of items to be handled is minimized.
- Upon diagnosing hypertension, the Medical Officer initiates treatment and advises patients for monthly follow-ups. At each monthly follow up, clinic staff will measure BP and, if BP is not under control, the Medical Officer will escalate treatment to the next step in the protocol, i.e. increasing the dose of the initial drug or adding a new drug as per the protocol.
- Once target BP (<140/90) is achieved at any step, the patient is advised to follow-up at the HWC/sub-centre closer to their house for a monthly check-up of BP and for collecting medicines for a month.

Example of State hypertension treatment protocol



The treatment goal is

Systolic BP < 140 mmHg

AND

Diastolic BP < 90 mmHg

MEDICATIONS USED IN THE STANDARD HYPERTENSION TREATMENT PROTOCOLS

Class (Drugs)	Important notes
Calcium channel blocker (Amlodipine)	• Does not require any metabolic monitoring. Therefore, a good first choice forprimary health centers • Can be given to women of childbearing age who may become pregnant • Ankle oedema ~10% cases (particularly at 10 mg dose and absence of ACEI/ ARB)
Angiotensin receptor blocker (ARB) [Telimisartan/Losartan]	• **Should not be given to women who are or may become pregnant** • Benefits some patients with kidney disease, prior heart attack, and low ejection fraction • Addition of ARB to CCB reduces the incidence of ankle oedema • ARB and ACB-I should not be combined together • Risk of hyperkalemia especially if the patient has CKD – consider checking serum creatinine and potassium before initiating treatment and thereafter at least once a year
Angiotensin-converting enzyme (ACE) inhibitor [Enalapril]	• **Should not be given to women who are or may become pregnant** • Benefits some patients with kidney disease, prior heart attack, and low ejection fraction • Addition of ACE inhibitors to CCB reduces the incidence of ankle oedema • ARB and ACB-I should not be combined together • Can cause persistent cough ~ 10% cases • Risk of hyperkalemia especially if the patient has CKD – consider checking serum creatinine and potassium before initiating treatment and thereafter at least once a year
Thiazide or thiazide-like diuretics [Hydrochlorothiazide, Chlorthalidone]	• **Should not be given to women who are or may become pregnant** • Risk of hypokalemia – consider checking serum creatinine and potassium before initiating treatment and thereafter at least once a year • Using along with ACE Inhibitor/ARB will reduce the risk of hypokalemia

SPECIFIC CASES:

Beta blocker: patients with history of heart attack within last three years or atrial fibrillation or heart failure. Not the first choice drug for the treatment of hypertension

Low dose aspirin (75mg) for patients with history of heart attack or stroke ever

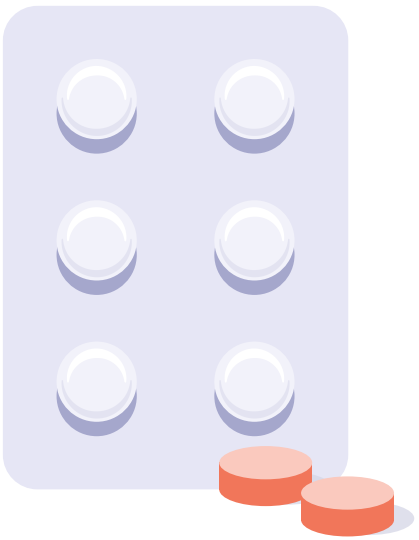
Statins: Atorvastatin 10mg is recommended in patients with prior CVD. Should not be given to women who are or may become pregnant.

Counselling on medication adherence

To keep BP at a safe and healthy level, patients must take medication daily for the rest of their lives. Patients may be reluctant to commit to taking medication every day and struggle to take medication regularly for a disease with no symptoms and may worry about the side effects of the drugs. Pharmacists can help patients understand the risks of high BP and the importance of taking medications regularly.

Pharmacists should work with other members of the health care team to implement patient reminder systems (e.g., e-mail, phone calls, text messages), where possible, to ensure patients adhere to their medication regimen.

Important: Check the patient's understanding before the patient leaves the health centre



COUNSELLING TO PATIENTS SHOULD STRESS THE FOLLOWING POINTS:

- High BP is very dangerous. Even though a patient does not feel sick, high BP can harm the organs and cause heart attack, stroke, kidney disease, and death.
- Patients can control high BP and protect themselves from heart attack and stroke by regularly taking medication and returning to the clinic for follow-ups.
- Taking medication regularly is the most important thing patients can do to control high BP. Even if a patient feels fine, they should NEVER stop a medication without consulting a doctor. There is a difference between medicines for long-term control (as in hypertension) and medicines for quick relief (such as for headaches) and taking the proper dose at the same time each day can save the patient's life.
- Medication should be consumed at the same time every day - when the patient can remember. Encourage patients to use medication reminders, such as alarms and smartphone applications.
- Importance of keeping enough supply of medications at home till the next visit to the health facility.
- Depending on the medications prescribed, describe potential adverse effects and how to deal with them.

Lifestyle management advice

Lifestyle changes are important, but **they are not enough to control high BP.** Some lifestyle changes can help patients with high BP when undertaken along with medication.

Avoid tobacco and alcohol

Reduce salt under 1 tsp/day

Eat 4-5 servings of fruits & vegetables

Exercise 2.5 hours every week

Team-based care and Task sharing

Extending care to the patient and community is the responsibility of every health care worker. Certain functions or skills can be shared between physicians and other health staff, such as staff nurses, supervisors, pharmacists, etc. This allows the program to reach more patients and allows physicians to focus on complicated cases.

These include:

- History taking
- BP measurement
- Continuing medication to those patients with controlled BP
- Providing counseling on the risks of high BP, medication adherence and lifestyle management

For task sharing to be successful, it is important to streamline patient flow at the health facilities.

Suggested Patient flow in Health facilities

BP not under control

Doctor - Diagnoses, prescribes drugs

BP under control

Nurse - Refills medications, updates treatment card, counsels

Pharmacist - Dispenses drugs, Reinforces treatment adherence

Leave the Card with the Pharmacist

Pharmacists should ensure uninterrupted availability of medications at the health facilities by appropriate forecasting, timely procurement, optimal stocking, and equitable distribution of protocol medications.

Regular and uninterrupted availability of medication

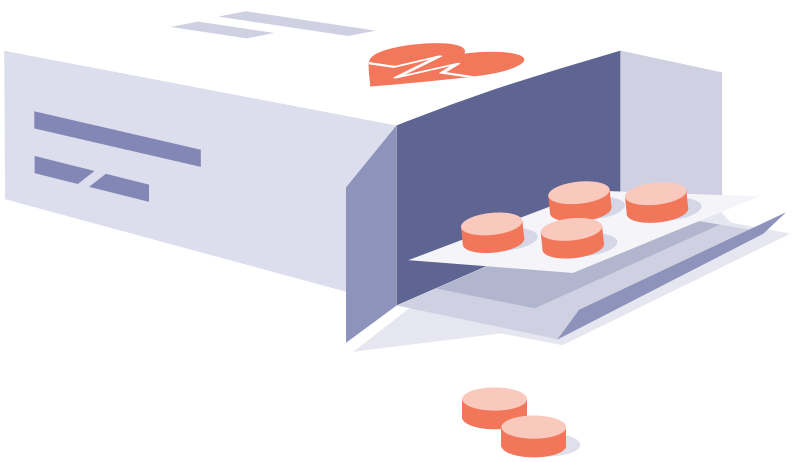
Ensuring access to an uninterrupted supply of medications to people with hypertension is one of the key components of IHCI. Stockouts or shortage of drugs increases the risk of lack of adherence to treatment and damages the credibility of the health program.

A) FORECASTING

Forecasting is the process of determining the quantity of medication to be required in a set timeframe (typically annually). It is the most important step in ensuring adequate drug availability. Commonly used methods of forecasting are (1) Consumption-based and (2) Morbidity-based.

As IHCI is a rapidly growing program, the morbidity based method is considered more suitable as the medication requirement would be different and higher than previous year's consumption. Under IHCI, a simple and easy to use tool has been devised for this purpose.

Consumption-based method	Morbidity-based method
Most approriate method when	
• The drug is been used regularly in the past without any shortage or stock-out • No major changes expected in the demand	• Past-year consumption data is not available/not reliable • Introduction of new drug or program
Is not useful when	
• A new drug is introduced • Changes in disease burden, treatment-seeking and protocols of treatment	• Prevalence data is not available • No standard treatment protocol adopted



B) MAINTAINING OPTIMUM STOCK

- Stock on hand data should be assessed in terms of "how long the stock would last" and not just in numeric quantities. How long the stock would last depends on the patient load and doses required for each patient.

- For monitoring stock adequacy, refer to the **ready reckoner** provided under the program. Based on the total number of patients registered and expected proportion of patients on different treatment regimes, the ready reckoner indicates the optimal drug requirement for 3 months.

- IHCI strongly recommends that one-month drugs should be dispensed to the patients. Therefore, the health facilities implementing IHCI should always have drug stocks for 2-3 months.

one-month stock of any protocol drug at any point in time.

- Stock position of protocol drugs of all health facility implementing IHCI must be reviewed at least once every month and refill stock levels (if required) to ensure stock up to 3 month's requirements.

Pharmacists may also use the following formula to determine "how long the stock would last" and "What quantity of drugs required for a particular period" depending upon the total patient load and treatment protocol adopted.

Stock available in number of patient days		
	AATTCC Protocol	**ATTACC Protocol**
Amlodipine 5mg	Stock/(N*1.4)	Stock/(N*1.12)
Telmisartan 40mg*	Stock/(N*0.37)	Stock/(N*0.65)
Chlorthalidone 12.5mg**	Stock/(N*0.06)	Stock/(N*0.06)
Stock requried for a particular period		
Amlodipine 5mg	No. of days*N*1.4	No. of days*N*1.12
Telmisartan 40mg*	No. of days*N*0.37	No. of days*N*0.65
Chlorthalidone 12.5mg**	No. of days*N*0.06	No. of days*N*0.06

NB: "N" is total number of patient registered under IHCI program

NOTES:

*States that have adopted Enalapril, may read it as Enalapril 5mg.
**States that have adopted Hydrochlorothiazide, may read it as Hydrochlorothiazide 25mg.

DISPENSING OF DRUGS

- Dispense at least 30 days drugs (or as directed in prescription) to hypertensive patients
- Counsel the patient on treatment adherence and lifestyle management
- Maintain a record of daily consumption
- Maintain a patient tracking matrix to track that all registered patients are taking medicine and ensure all patients taking hypertension medicines are registered under IHCI program.

MAINTENANCE OF RECORDS

Health facilities should maintain records of receipt and issue of all drug stocks, irrespective of the source, preferably in a single stock ledger. Health facilities should regularly update the records and report the actual status in the quarterly/monthly reports.

Health care staff should ensure there is no interruption in the supply of medications.

Annexure A: Daily Consumption record at Drug Dispensing Counter (DDC)

S.no	Drug Name	Opening balance	Receipt during month	Date-wise Consumption									Total consumption of the month	Losses/ expired (if any)	Closing balance
				1	2	3	4	5	6	...	...	31			
1	Amlodipine 5mg	200	2000 +3000 +2000	270	180	300	10	150	210			240			1200
2	Amlodipine 10mg														
3	Telmisartan 40mg														
4	Telmisartan 80mg														
5	Losartan 25mg														
6	Losartan 50mg														
7	Hydrochlorothiazide 25mg														
8	Chlorthalidone 6.25mg														
9	Chlorthalidone 12.5mg														

NOTES:

Opening balance: Enter the drug availability, at the drug dispensing counter on the first day of the month. For example, if the DDC has 200 tablets of Amlodipine 5mg on 1st Sept, enter '200' in the opening balance.

Receipt during the month: Enter the number of drugs received during the month. For example, in the month of Sept if DDC received the following amount of Amlodipine 5mg
1st Sept – 2000 | 12th Sept – 3000 | 25th Sept – 2000
Enter this as 2000+3000+2000

In date wise consumption: enter the total quantity of drugs issued by end of each day

Closing balance: count the stock available on the last day of the month and enter.
Note: this would be the opening balance for the next month.

Annexure B: IHCI patient tracking Matrix: Drug Dispensing Counter (DDC)

Name of the facility:													
S.no	Redg. No.	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
	1												
	2												
	3												
	4												
	5												
	6												
	7												
	...												
	N												

NOTES:

When a registered patient receives drugs (ALL PRESCRIBED IHCI DRUGS) at a DDC, the pharmacist can put a '√' against the registered number for the relevant month.

If one or more prescribed drugs are not available or not dispensed, then put an **'X'**

If a patient did not come to the clinic in a particular month, keep the cell **'blank'**

If an unregistered patient comes to dispensing counter, (s)he can be guided to get registered.

Annexure C:
Min-Max Inventory Levels

Min-Max inventory levels stand for the minimum and maximum level of the stock to be maintained at a health facility.

- The minimum stock level is the level of stock at which actions to replenish drugs must be ensured.
- Buffer stock is the quantity of stock that should be maintained to meet the requirement in case there is a disruption or delay in the regular frequency of supply. Typically, one month's requirement is kept as buffer stock.
- Under normal circumstances, a facility should not have stock above the maximum stock level.

The decision for minimum and maximum level is dependent upon how frequently the health facility receives the drug stock (Replenishment period).

Min stock level =
Quantity required for replenishment period
+ buffer/safety stock

Maximum stock level =
2 X quantity required for replenishment period
+ buffer stock

Recommended Min and Max stock based on frequency of supply

Frequency of Supply	Buffer Stock	Minimum Stock	Maximum Stock
Monthly	1 month	2 months	3 months
Two Monthly	1 month	3 months	5 months
Quarterly	1 month	4 months	7 months

Calculating Indent = Max Stock Quantity Level – Stock in Hand

Annexure D: Drug requirement - Ready Reckoner AATTCC Protocol

No. of patients registered (up-to)	Three-month drug requirements			No. of patients registered (up-to)	Three-month drug requirements		
	Amlodipine 5mg	Telmisartan 40mg*	Chlorthalidone 12.5mg**		Amlodipine 5mg	Telmisartan 40mg*	Chlorthalidone 12.5mg**
20	2520	660	120	**520**	65520	17160	3120
40	5040	1320	240	**540**	68040	17820	3240
60	7560	1980	360	**560**	70560	18480	3360
80	10080	2640	480	**580**	73080	19140	3480
100	12600	3300	600	**600**	75600	19800	3600
120	15120	3960	720	**620**	78120	20460	3720
140	17640	4620	840	**640**	80640	21120	3840
160	20160	5280	960	**660**	83160	21780	3960
180	22680	5940	1080	**680**	85680	22440	4080
200	25200	6600	1200	**700**	88200	23100	4200
220	27720	7260	1320	**720**	90720	23760	4320
240	30240	7920	1440	**740**	93240	24420	4440
260	32760	8580	1560	**760**	95760	25080	4560
280	35280	9240	1680	**780**	98280	25740	4680
300	37800	9900	1800	**800**	100800	26400	4800
320	40320	10560	1920	**820**	103320	27060	4920
340	42840	11220	2040	**840**	105840	27720	5040
360	45360	11880	2160	**860**	108360	28380	5160
380	47880	12540	2280	**880**	110880	29040	5280
400	50400	13200	2400	**900**	113400	29700	5400
420	52920	13860	2520	**920**	115920	30360	5520
440	55440	14520	2640	**940**	118440	31020	5640
460	57960	15180	2760	**960**	120960	31680	5760
480	60480	15840	2880	**980**	123480	32340	5880
500	63000	16500	3000	**1000**	126000	33000	6000

Example: For a health facility with 210 patients registered, adequate stock for 3 months would be 27720 tablets of Amlodipine 5mg, 7260 tablets of Telmisartan 40mg & 1320 tablet of Chlorthalidone 12.5mg

NOTES:

If there are multiple strengths of the same medication is available, convert to the base strength mentioned in the table.

*States that have adopted Enalapril, may read it as Enalapril 5mg.

**States that have adopted Hydrochlorothiazide, may read it as Hydrochlorothiazide 25mg.

Annexure E: Drug requirement - Ready Reckoner ATTACC Protocol

No. of patients registered (up-to)	Three-month drug requirements			No. of patients registered (up-to)	Three-month drug requirements		
	Amlodipine 5mg	Telmisartan 40mg*	Chlorthalidone 12.5mg**		Amlodipine 5mg	Telmisartan 40mg*	Chlorthalidone 12.5mg**
20	2040	1200	120	**520**	53040	31200	3120
40	4080	2400	240	**540**	55080	32400	3240
60	6120	3600	360	**560**	57120	33600	3360
80	8160	4800	480	**580**	59160	34800	3480
100	10200	6000	600	**600**	61200	36000	3600
120	12240	7200	720	**620**	63240	37200	3720
140	14280	8400	840	**640**	65280	38400	3840
160	16320	9600	960	**660**	67320	39600	3960
180	18360	10800	1080	**680**	69360	40800	4080
200	20400	12000	1200	**700**	71400	42000	4200
220	22440	13200	1320	**720**	73440	43200	4320
240	24480	14400	1440	**740**	75480	44400	4440
260	26520	15600	1560	**760**	77520	45600	4560
280	28560	16800	1680	**780**	79560	46800	4680
300	30600	18000	1800	**800**	81600	48000	4800
320	32640	19200	1920	**820**	83640	49200	4920
340	34680	20400	2040	**840**	85680	50400	5040
360	36720	21600	2160	**860**	87720	51600	5160
380	38760	22800	2280	**880**	89760	52800	5280
400	40800	24000	2400	**900**	91800	54000	5400
420	42840	25200	2520	**920**	93840	55200	5520
440	44880	26400	2640	**940**	95880	56400	5640
460	46920	27600	2760	**960**	97920	57600	5760
480	48960	28800	2880	**980**	99960	58800	5880
500	51000	30000	3000	**1000**	102000	60000	6000

Example: For a health facility with 210 patients registered, adequate stock for 3 months would be 22440 tablets of Amlodipine 5mg, 13200 tablets of Telmisartan 40mg & 1320 tablet of Chlorthalidone 6.25mg

NOTES:

If there are multiple strengths of the same medication is available, convert to the base strength mentioned in the table.

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