Managing **Hypertension**

1 When to start a drug and what to aim for?

The threshold to start a drug may be different from the blood pressure goal for a patient on drug therapy

	Primary Prevention & Lower Risk	Secondary Prevention & Higher Risk	Diabetes
Who is included	◦ No history of heart disease, heart attack, heart failure, or stroke	◦ History of heart attack/stroke **OR** ◦ 10-year Framingham CV risk score >15%	◦ Type 1 ◦ Type 2
When to start a drug (threshold)	◦ >160/100 mmHg (Grade A)	◦ >140/90 mmHg (SBP Grade C; DBP Grade A)	◦ >130/80 mmHg (Grade C)
What to aim for (goal)	◦ <140/90 mmHg (Grade A)	◦ <140/90 mmHg (Grade A)	◦ <130/80 mmHg (Grade C)

Table is based on the 2018 Hypertension Canada guidelines. SBP (systolic), DBP (diastolic). Grade A evidence: strong evidence; Grade B evidence: moderate evidence; Grade C evidence: weak evidence.

Some patients with specific cardiovascular risk factors may opt for a more intensive systolic BP goal of 120 mmHg (Grade B)

Help patients choose a threshold and goal based on their preferences, medical history, and frailty

Consider waiting if there is a short-term cause of hypertension (e.g., pain, stress, trauma)

Intervention	Decrease in Systolic Blood Pressure
Antihypertensive drug	~ 10 mmHg
Modify diet (e.g., DASH diet)	~ 11 mmHg
Reduce alcohol intake (men ≤2 drinks/day; women ≤1 drinks/day)	4 mmHg
Exercise more (90-150 min/week of aerobic + resistance training)	4 - 8 mmHg
Lose weight	1 mmHg / kg lost

Table is adapted from the American College of Cardiology 2017 Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults.

2 What drug to start first?

There's no rush to lower BP. Start with a low dose.

First Line Drugs	Example
Thiazide-like diuretics	Chlorthalidone†
ACE-inhibitors	Ramipril
ARBs	Candesartan
Long-acting calcium channel blockers	Amlodipine
Beta-blockers (under age 60)	Bisoprolol

†Often used first because it lowers cardiovascular risk more than amlodipine and lisinopril (ALLHAT 2002)

Note: ACE-inhibitors are not first line for black patients because they are less effective than diuretics and CCBs and have more side effects (angioedema and cough).

3 When to add another drug?

- If BP is above goal at the maximum tolerated dose
- If BP is above goal in a series of readings at a single office visit or at home

Expert opinion suggests patients respond best when a drug is used from A and B.

A	B
ACE-inhibitors/ARBs	Thiazide/Thiazide-like diuretics
Beta-blockers	Calcium channel blockers

Table is based on the 2018 Hypertension Canada guidelines and the 2001 Canadian Hypertension Recommendations.

ACE-inhibitors = Angiotensin Converting Enzyme inhibitors
ARBs = Angiotensin Receptor Blockers
CCBs = Calcium Channel Blockers
SCr = Serum Creatinine

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4 Measuring Blood Pressure in Clinic

Tips for healthcare professionals:

Take ≥3 readings/visit every 4 weeks after starting or changing a drug

Once stable, recheck blood pressure every 6 months and ask about side effects

Educate patients on proper home blood pressure monitoring if:

Clinic readings are different from home readings

An antihypertensive drug has been started, changed, or stopped

Monitoring for Side Effects

Thiazide-like diuretics, ACE-inhibitors, ARBs:
Check electrolytes and serum creatinine at baseline, 1 week after starting, and 1 week after a dose increase

Drug Class	Side effects that may require a change in dose	Side effects that may require a change in drug
Thiazide-like diuretics	◦ Symptomatic hypotension	◦ Recurrent gout attacks, hyponatremia
ACE-inhibitors, ARBs	◦ Symptomatic hypotension	◦ Hyperkalemia >5.6 mmol/L or increase in SCr >30% from baseline, angioedema ◦ Dry cough (switch from ACE-inhibitor to ARB)
Calcium channel blockers	◦ Symptomatic hypotension, ankle edema, headache	◦ If side effects are not tolerated by patient
Beta-blockers	◦ Exercise intolerance, symptomatic bradycardia	◦ If side effects are not tolerated by patient, advanced heart block (i.e. 2nd degree or greater)

5 Special Situations

Resistant Hypertension

def. Patient meets the following criteria:

- Blood pressure above goal;
- Taking at least 3 antihypertensive drug classes (i.e., diuretic, CCB, ACE-inhibitor/ARB);
- Drugs are at maximally tolerated doses;
- Patient is adherent.

Preferred treatment:

More effective to add spironolactone than a beta-blocker or an alpha-blocker for patients with resistant hypertension. Monitor for hyperkalemia. (PATHWAY-2 2016)

When to Refer to Hospital

If BP is markedly elevated, refer to hospital if any of these occur:

- Nausea, vomiting, confusion
- Sudden shortness of breath, heavy chest pain
- Sharp, tearing chest and back pain

Hypertensive emergencies occur when patients have markedly elevated blood pressure that causes acute target organ damage (kidney, heart, brain).

1. The 2018 Hypertension Canada Guidelines. https://guidelines.hypertension.ca/
2. RxTx. Ottawa (ON): CPhA; c2018. CTC online: Hypertension; Available from: www.myrxtx.ca.
3. Oral Antihypertensives: Summary/Guidelines Comparison Chart. www.rxfiles.ca.
4. ACC 2017 Hypertension Guidelines. J Am Coll Cardiol. 2017;1-28.
5. Williams B et al. PATHWAY-2. The Lancet. 2015;386:2059-2068.
6. ALLHAT. JAMA. 2002;288(23):2981–2997.
7. Zhang Y et al. Hypertension. 2011;58:155-160.
8. The 2001 Canadian Hypertension Recommendations. Perspectives in Cardiology. 2002;38:46.

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