



Canadian Council of Cardiovascular Nurses

Through education, standards, research and health promotion:
advancing the profession and cardiovascular health of Canadians

♥ HEALTH PROMOTION STARTS WITH US ♥

Hypertension

Did you know?

- ↑ B/P is one of the leading causes of death in the world. As age increases, lifetime risk is > 90%.
- 50% of Canadians over 65 years have hypertension.
- 1 in 5 adult Canadians have high normal blood pressure and almost 43% are unaware.
- Over 90% of hypertensive patients have additional cardiovascular risks that require screening, assessment and management (e.g., high blood sugar, high lipid levels, obesity, smoking, sedentary lifestyle).

• Blood pressure:

Optimal	Normal	High Normal
< 120 and < 80	< 130 and < 85	130 – 139 or 85 – 89

- Hypertension is a blood pressure over 140/90 or over 130/80 in individuals with diabetes or kidney disease.
- Target blood pressure (at home) should be less than 135/85.
- **Lifestyle modifications** are the **cornerstone** of hypertension management and must be **advocated** as follows:
 - [Maintaining a diet low in salt (less than a total of 2,300 mg or 1 tsp/day) and saturated fats, and high in fresh fruits and vegetables while using low fat dairy products “DASH” (Dietary Approaches to Stop Hypertension) diet]. Many processed and restaurant foods contain high amounts of sodium per serving.
 - 30 to 60 minutes of accumulated (or continuous) moderate intensity dynamic activity (e.g., walking, biking, swimming, jogging (anything ending in “ing”) four to seven days per week.
 - Weight reduction in those who are overweight.
 - Alcohol reduction in those who drink more than two standard drinks/day.
 - A smoke free environment and tobacco cessation to reduce cardiovascular risk.
 - Maintenance of normal blood sugar levels.
 - Encourage use of home blood pressure monitoring with approved device and proper technique.
- Most individuals will require two or more drugs in addition to lifestyle therapies to achieve the recommended blood pressure targets. The average reduction in blood pressure lowering with lifestyle changes or a single blood pressure medication is 10/5. Combining medications (e.g., diuretic with ACE can be expected in the management of hypertension).
- Focus on adherence. Non-adherence to lifestyle and pharmacotherapy is a major cause of poor blood pressure control and contributes to ↑ overall cardiovascular risk.
- Thiazide diuretics, ACE inhibitors, ARB’s, long acting calcium channel blockers or beta-blockers* are recommended classes

* beta-blockers are **not** indicated as first line therapy for age 60 and above

• Examples of drugs, conditions and substances that can induce or aggravate hypertension:

- NSAIDS including coxinhbitors
- Steroids
- Oral contraceptives and sex hormones
- Vasoconstricting/sympathomimetic drugs
- Stimulants including elicit drugs (e.g., cocaine), decongestants
- Licorice root
- Sleep Apnea

- Table Salt

** Excess dietary sodium is a significant cause of hypertension **

Sources: Blood Pressure Canada Sodium Policy, 2009 Canadian Hypertension Education Program Guidelines

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THE CANADIAN HYPERTENSION SOCIETY
SOCIÉTÉ CANADIENNE D'HYPERTENSION ARTÉRIELLE

Table 8: Considerations in the Individualization of Antihypertensive Therapy*†

ACE angiotensin converting enzyme; TIA transient ischemic attack; ARB angiotensin receptor blocker

	Initial therapy	Second-line therapy	Notes and/or Cautions
HYPERTENSION WITHOUT OTHER COMPELLING INDICATIONS			TARGET < 140/90 mmHg
Diastolic +/- systolic hypertension	Thiazide diuretics, beta-blockers, ACE inhibitors, ARBs, or long-acting calcium channel blockers (consider ASA and statins in selected patients). Consider initiating therapy with a combination of first-line drugs if the blood pressure is >20 mmHg systolic or >10 mmHg diastolic above target.	Combinations of first-line drugs	Beta-blockers are not recommended as initial therapy in those over 60 years of age. Hypokalemia should be avoided by using potassium-sparing agents in those who are prescribed diuretics as monotherapy. ACE inhibitors are not recommended in blacks. ACE inhibitors, ARBs and direct renin inhibitors are potential teratogens and caution is required if prescribing to women of child bearing potential. Combination of an ACE-inhibitor with an ARB is specifically not recommended.
Isolated systolic hypertension without other compelling indications	Thiazide diuretics, ARBs or long-acting dihydropyridine calcium channel blockers.	Combinations of first-line drugs	Same as diastolic +/- systolic hypertension
DIABETES MELLITUS			TARGET < 130/80 mmHg
Diabetes mellitus with nephropathy	ACE inhibitors or ARBs	Addition of thiazide diuretics, cardioselective beta-blockers, long-acting calcium channel blockers	If the serum creatinine level is >150 µmol/L, a loop diuretic should be used as a replacement for low-dose thiazide diuretics if volume control is required
Diabetes mellitus without nephropathy	ACE inhibitors, ARBs, dihydropyridine CCBs or thiazide diuretics	Combination of first-line drugs or if first-line agents are not tolerated addition of cardioselective beta-blockers and/or long-acting non dihydropyridine calcium channel blockers	Normal albumin to creatinine ratio [ACR] < 2.0 mg/mmol in men and < 2.8 mg/mmol in women Combination of an ACE-inhibitor with an ARB is specifically not recommended.
CARDIOVASCULAR AND CEREBROVASCULAR DISEASE			TARGET < 140/90 mmHg
Angina	Beta-blockers, ACE inhibitors except in low risk patients	Long-acting calcium channel blockers	Avoid short-acting nifedipine. Combination of an ACE-inhibitor with an ARB is specifically not recommended.
Prior myocardial infarction	Beta-blockers and ACE inhibitors (ARBs if ACEI- intolerant)	Long-acting calcium channel blockers	Combination of an ACE-inhibitor with an ARB is specifically not recommended.
Heart failure	ACE inhibitors (ARBs if ACEI- intolerant) and beta-blockers. Spironolactone in patients with NYHA class III or IV symptoms.	ARB in addition to ACE inhibitor. Hydralazine/isosorbide dinitrate combination. Thiazide or loop diuretics, are recommended as additive therapy	Titrate doses of ACEI and ARB to those used in clinical trials. Avoid nondihydropyridine calcium channel blockers (diltiazem, verapamil). Monitor potassium and renal function if combining an ACE inhibitor with ARB.
Left ventricular hypertrophy	Does not affect initial treatment recommendations	Combination of additional agents	Hydralazine and minoxidil can increase left ventricular hypertrophy.
Past cerebrovascular accident or TIA	ACE inhibitor/diuretic combinations	Combination of additional agents	This does not apply to acute stroke. Blood pressure reduction reduces recurrent cerebrovascular events in stable patients. Combination of an ACE-inhibitor with an ARB is specifically not recommended.
NON DIABETIC CHRONIC KIDNEY DISEASE			TARGET < 130/80 mmHg
Non diabetic chronic kidney disease with proteinuria	ACE inhibitors (ARBs if ACEI- intolerant) if there is proteinuria. Diuretics as additive therapy	Combinations of additional agents	Avoid ACE inhibitors or ARBs if bilateral renal artery stenosis or unilateral disease with solitary kidney. Patients placed on an ACE inhibitor or an ARB should have their serum creatinine and potassium carefully monitored. Combination of an ACE-inhibitor and ARB is specifically not recommended in people with chronic kidney disease without proteinuria.
Renovascular disease	Does not affect initial treatment recommendations	Combinations of additional agents	Avoid ACE inhibitors or ARB if bilateral renal artery stenosis or unilateral disease with solitary kidney.
OTHER CONDITIONS			TARGET < 140/90 mmHg
Peripheral arterial disease	Does not affect initial treatment recommendations	Combinations of additional agents	Avoid beta-blockers with severe disease
Dyslipidemia	Does not affect initial treatment recommendations	Combinations of additional agents	
Overall vascular protection	Statin therapy for patients with 3 or more cardiovascular risk factors or atherosclerotic disease. Low dose ASA in patients with controlled blood pressure		Caution should be exercised with the ASA recommendation if blood pressure is not controlled.

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† It is recommended that normotensive adults with established cardiovascular disease be treated with an ACE inhibitor. Normotensive adults who have had a stroke or TIA should be treated with an ACE inhibitor and a diuretic.