The Canadian Hypertension Education Program (CHEP) 2011 guidelines for pharmacists

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Introduction

Hypertension continues to be a common chronic disease affecting 1 in 5 adult Canadians.[1] New data suggest that Canada has the highest reported rates of hypertension awareness, treatment and control,[1-3] yet one-third of patients with hypertension in Canada remain uncontrolled and at risk of complications such as heart attack, stroke and heart failure.[1] Importantly, in the high-risk group of patients with diabetes and hypertension, two-thirds are not controlled.

As a highly accessible health professional, there is a public health need to have pharmacists take a proactive, responsible role in the management of hypertension. Indeed, there is strong evidence for pharmacists improving the care of people with hypertension.[4-9]

The 2011 Canadian Hypertension Education Program (CHEP) guidelines represent the 12th annual update to these guidelines and are available in full in the *Canadian Journal of Cardiology*[10] or on the Hypertension Canada website (www.hypertension.ca). This is the 6th update of pharmacist-specific guidelines for the management of hypertension.

I. Blood pressure assessment

- Blood pressure (BP) should be measured in adults at all appropriate visits with either automatic or manual devices. Proper technique should be used when measuring BP.
- Seated BP shall be used to determine and monitor treatment decisions.
- Standing BP is used to assess postural hypotension (defined as a drop of ≥20 mmHg systolic or ≥10 mmHg diastolic from supine BP within 3 minutes of standing), which may require treatment modification.
- BP should be measured in both arms on at least one visit — if one arm has a consistently higher pressure, that arm should be used for further measurement and interpretation.
- In situations of arrhythmia, automatic devices may be unable to accurately detect pulse sounds and measure BP, requiring manual measurement. Technique for manual BP measurement is available in the full CHEP guidelines at **www.hypertension.ca**.

Recommendations

- Pharmacists should measure BP in adult patients using proper technique with a manual or automated device at appropriate visits.
- BP measurement devices used should be those validated by Hypertension Canada.
- Manual measurement should be used for patients with arrhythmia.
- Treatment decisions should be based upon seated BP measurements in the arm with the highest measurement.

BOX 1 Measuring blood pressure

Measurements should be taken with a device known to be accurate through regular calibration and validated by Hypertension Canada as indicated by the symbol: 

- The proper cuff size is used as specified by the manufacturer, placed 3 cm above the elbow crease and centrally over the brachial artery.
- Patients should rest comfortably for 5 minutes prior to measurement.
- During measurement, the patient should be seated with back support and his/her arm (bare or thin clothing) supported with the BP cuff at heart level. The patient should not talk or cross legs.
- At least 3 measurements should be taken at least 1 minute apart, with the first reading discarded and the latter 2 averaged.
- Particularly in patients reporting symptoms consistent with postural hypotension (dizziness, imbalance and lightheadedness upon standing), as well as those individuals who are elderly or diabetic, BP should also be measured after 2 minutes standing, with their arm supported to maintain the cuff at heart level.
- Record the patient's BP, heart rate, the arm used and whether the patient was supine, sitting or standing.

II. Diagnosis of hypertension

- Patients demonstrating features of a hypertensive urgency or emergency (e.g., BP ≥200/120 mmHg, headache, blurred vision, dizziness, nausea, anxiety or shortness of breath) should receive immediate emergency medical management.
- The process for the diagnosis of hypertension in patients with and without diabetes, chronic kidney disease or target organ damage is illustrated in Figure 1.
- For diagnosis of hypertension to be made, SBP and/or DBP must be above the cut-offs in the table. SBP and DBP do not both need to be elevated for a hypertension diagnosis to be made.
- Patients not diagnosed as hypertensive and without evidence of macrovascular target organ damage should receive yearly BP re-assessment.

Recommendations

- Pharmacists shall refer any patient with signs of hypertensive urgency/emergency for immediate medical attention.
- Diagnosis of hypertension can be made by following the process and diagnostic cut-offs indicated in Figure 1.
- Patients with high normal blood pressure (130–139/85–89 mmHg), but not at the cut-offs for diagnosis of hypertension, should have their blood pressure re-examined annually.

III. Secondary causes of hypertension

- Patients with elevated blood pressure should be assessed for the presence of exogenous factors that can contribute to hypertension (Table 1). Such contributing factors should be removed or mitigated if possible.
- Patients should be assessed for a history or presence of target organ damage such as stroke, dementia, hypertensive retinopathy, left ventricular hypertrophy, myocardial infarction, angina, heart failure, chronic kidney disease (CKD, defined as a glomerular filtration rate [GFR] of <60 mL/min), albuminuria or peripheral artery disease.
- Patients whose hypertension is resistant to drug therapy should receive assessment for adherence to therapy and the potential for other secondary causes below.
- Pharmacists should collaborate with the patient's primary care physician as required for the assessment of exogenous factors or target organ damage as outlined above.
- All patients initially diagnosed with hypertension should be assessed by their physician for investigation if any of the following signs/symptoms of secondary causes are present:
  - Renovascular hypertension
    - Sudden onset or worsening of hypertension
    - Age >55 or <30 years
    - Hypertension resistant to 3 or more drugs
    - Rise in serum creatinine of ≥30% associated with use of an ACE inhibitor or angiotensin receptor antagonist

TABLE 1 Examples of exogenous factors that can induce or aggravate hypertension

Prescription drugs	• NSAIDs (including coxibs) • Corticosteroids and anabolic steroids • Oral contraceptives and sex hormones • Vasoconstricting decongestants • Calcineurin inhibitors (cyclosporine, tacrolimus) • Erythropoietin and analogues • Antidepressants — monoamine oxidase inhibitors (MAOIs), serotonin-norepinephrine reuptake inhibitors (SNRIs) and selective serotonin reuptake inhibitors (SSRIs) • Midodrine
Other substances	• Licorice root • Stimulants, including cocaine and caffeine • Salt • Excessive alcohol use

  - Hyperaldosteronism
    - Spontaneous hypokalemia (K^+ <3.5 mmol/L)
    - Diuretic-induced hypokalemia (K^+ <3.0 mmol/L)
    - Hypertension resistant to 3 or more drugs
  - Pheochromocytoma
    - Paroxysmal and/or severe (BP ≥180/110 mmHg) sustained hypertension refractory to usual antihypertensive therapy
    - Hypertension with the presence of catecholamine-excess symptoms (e.g., headache, palpitations, sweating, panic attacks, pallor)
    - Hypertension triggered by beta-blockers or monoamine oxidase inhibitors (MAOIs)

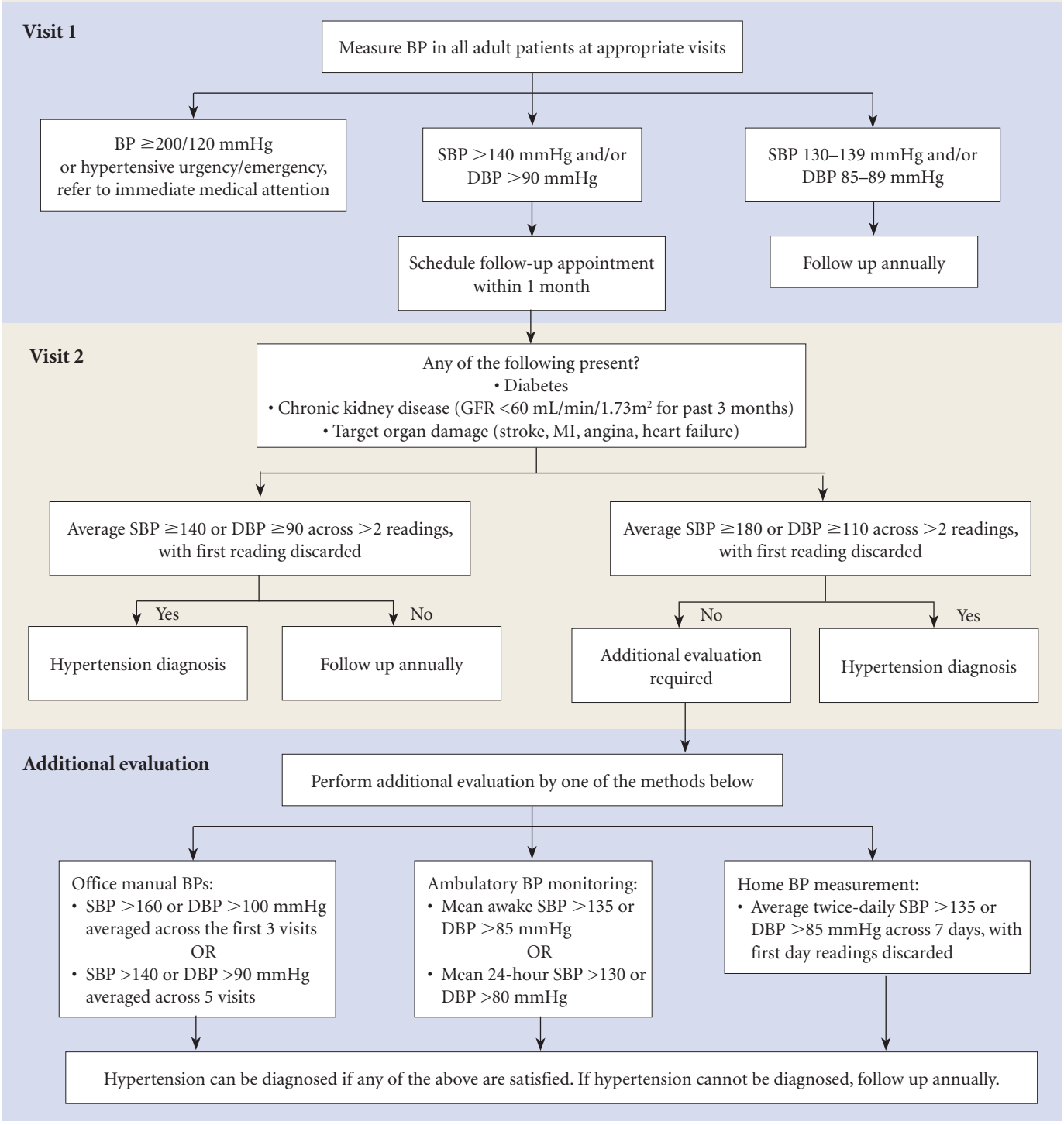
Recommendations

- Pharmacists shall actively question in all patients with uncontrolled hypertension the presence of exogenous factors contributing to hypertension (with a focus on prescription and nonprescription drugs, supplements and lifestyle contributions) and refer the patient to their physician for investigation of the history or presence of target organ damage and signs/symptoms suggestive of secondary causes of hypertension if not already completed.
- Pharmacists should assess adherence in all patients whose hypertension appears resistant to drug therapy.
- Pharmacists should collaborate with the patient's primary care physician in the assessment and management of such contributing factors whenever possible.

IV. Global cardiovascular risk assessment and protection

- Pharmacists should assess patients' global cardiovascular risk using one of the multifactorial tools available:
  - Framingham Risk Assessment Tool – www.nhlbi.nih.gov/

FIGURE 1 **Flow chart for the assessment and diagnosis of hypertension**



guidelines/cholesterol/index.htm
- Reynolds Risk Score – www.reynoldsriskscore.org/
- MyHealthCheckup – www.myhealthcheckup.com
- UKPDS Risk Engine – www.dtu.ox.ac.uk/riskengine/
- Systematic Cerebrovascular and Coronary Risk Evaluation (SCORE) – www.scorecanada.ca

- Patients diagnosed with hypertension should receive the following laboratory tests for global cardiovascular risk assessment and to aid in the selection of appropriate treatment options:
  - Urinalysis (with particular attention paid to the presence of protein, glucose and/or red blood cells)
  - Blood chemistry (potassium, sodium, creatinine)
  - Fasting blood glucose

  - Fasting serum total cholesterol and high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C) and triglycerides
  - Standard 12-lead electrocardiography
  - Patients with diabetes should also receive assessment for urinary albumin excretion (target albumin/creatinine ratio <2.00 mg/mmol in men, <2.80 mg/mmol in women)[11]
- Patients with diabetes should be treated and monitored according to the current Canadian Diabetes Association guidelines.[11]
- Statin therapy is recommended in patients with established atherosclerotic disease or the presence of 3 or more cardiovascular risk factors as outlined in Table 2. Patients should be treated to achieve the targets of the current Canadian Cardiovascular Society guidelines for the diagnosis and treatment of dyslipidemia.[12]
- The addition of low-dose acetylsalicylic acid therapy should also be strongly considered, but exercise caution if blood pressure is not controlled.
- The presence of other modifiable risk factors for cardiovascular events should be assessed and reduced, including sedentary lifestyle, poor dietary habits, abdominal obesity, stress and nonadherence to health recommendations/treatments.

TABLE 2 Cardiovascular risk factors for consideration of statin therapy in patients with hypertension

- Male sex
- Age ≥55
- ECG abnormalities (left ventricular hypertrophy, left bundle branch block, left ventricular strain pattern, abnormal Q-waves or ST-T changes compatible with ischemic heart disease)
- Peripheral arterial disease
- Previous stroke or transient ischemic attack
- Microalbuminuria or proteinuria
- Diabetes mellitus
- Smoking
- Family history of premature cardiovascular disease (age <55 in men and <65 in women)
- Total cholesterol to HDL-C ratio ≥6

Recommendations

- Pharmacists should assess global cardiovascular risk using one of the available risk prediction tools in patients with hypertension and work with the patient and their primary care team to achieve patient-specific targets for diabetes and cholesterol.
- Initiation of low-dose ASA should also be considered, with caution exercised in patients with uncontrolled BP (i.e. ≥140/90 for patients without diabetes, target organ damage or chronic kidney disease or ≥130/80 for those with diabetes, target organ damage or chronic kidney disease).
- Modifiable risk factors including lifestyle considerations should also be assessed and addressed by pharmacists.

V. Lifestyle management

- Lifestyle modifications are effective in preventing and treating hypertension, as well as reducing cardiovascular risk, with brief individualized health care professional interventions increasing the probability of lifestyle change.
- Height, weight and waist circumference should be measured and body mass index (BMI) calculated and recorded for all adults according to the following formula, with target BMI of 18.5–24.9 kg/m^2.

$$\text{Body mass index (kg/m}^2\text{)} = \frac{\text{weight in kilograms}}{\text{height in meters}^2}$$

- A diet emphasizing fruits, vegetables, low-fat dairy, fiber, whole grains and proteins from plant sources should be emphasized, as well as reduced saturated fat and cholesterol intake.
- Dietary sodium intake should be limited to 1500 mg/day for adults ≤50 years of age, 1300 mg/day if age 51–70 or 1200 mg/day if age >70. The Dietary Approaches to Stop Hypertension (DASH) diet can be recommended for patients with hypertension or to prevent hypertension in healthy individuals.[13]
- Weight loss strategies should be multidisciplinary and involve dietary, physical activity and behavioural interventions. Patients should strive to achieve waist circumference of <102 cm for men and <88 cm for women.
- All hypertensive and nonhypertensive individuals should be advised to accumulate 30–60 minutes of moderate-intensity exercise at least 4 days per week.
- Alcohol should be limited to ≤2 standard drinks/day, not to exceed 14 drinks per week for men and 9 drinks per week for women.
- Individualized strategies, including relaxation techniques, should also be considered for patients in whom stress may be contributing to elevated blood pressure.
- Supplementation with potassium, calcium and magnesium is not recommended for the prevention or treatment of hypertension.
- Hypertensive patients receiving lifestyle modification advice alone (i.e., nonpharmacological treatment) should be followed up at 3–6 month intervals, with shorter intervals recommended for patients with higher BPs.

Recommendations

- Pharmacists should participate in the provision of multidisciplinary advice and support for lifestyle approaches to hypertension management including dietary, physical activity and behavioural approaches.
- Pharmacists are ideally suited to provide pharmacologic and nonpharmacologic support for smoking cessation activities.
- Pharmacists should also be aware that supplementation with potassium, calcium and magnesium are not recommended for hypertension prevention or treatment in the absence of specific deficiencies.

VI. Choice of drug therapy for adults without compelling indications for specific agents

- Antihypertensive therapy should be initiated for patients meeting any of the following criteria regardless of the patient's age, with caution exercised in frail elderly patients:
  - Average SBP ≥160 mmHg or DBP ≥100 mmHg in patients without macrovascular target organ damage or other cardiovascular risk factors
  - Average SBP ≥140 or DBP ≥90 mmHg in patients with macrovascular target organ damage or other cardiovascular risk factors
- Initial therapy should be monotherapy with one of the following:
  - Thiazide diuretic (with care taken to avoid hypokalemia)
  - Beta-blocker (in patients <60 years of age)
  - ACE inhibitor (in non-black patients)
  - Long-acting calcium channel blocker (CCB)
  - Angiotensin II receptor blocker (ARB)
- If adverse effects occur or additional BP reduction is required, additional drugs from the above list should be used.
- Caution should be exercised if combining a non-dihydropyridine CCB (diltiazem, verapamil) and a beta-blocker due to the risk of atrioventricular node block and the combination of an ACE inhibitor and ARB is not recommended.
- Alpha-blockers are not recommended as first-line agents for uncomplicated hypertension.
- Combination therapy may be used as initial treatment if blood pressure is ≥20/10 mmHg above target, with caution in elderly patients who may be more prone to and less tolerant of a substantial fall in BP.
- If BP is still not controlled with 2 or more first-line agents, other antihypertensive drugs can be added.
- After pseudo-resistance (e.g., white-coat hypertension or pseudo-hypertension in the elderly), drug interactions (Table 1) and secondary causes have been ruled out, pharmacists should evaluate adherence and other possible reasons for poor response to therapy, as indicated in Table 3.

TABLE 3 Possible reasons for poor response to antihypertensive therapy

Nonadherence	• Dietary • Medication
Associated conditions	• Obesity • Cigarette smoking • Excessive alcohol consumption • Sleep apnea • Chronic pain
Suboptimal treatment regimen	• Dosage too low • Inappropriate combinations of antihypertensive drugs
Volume overload	• Excessive salt intake

- Patients receiving antihypertensive drug treatment should be seen every 4–8 weeks until readings on 2 consecutive visits are below their target BP. Patients who are symptomatic, have severe hypertension or target organ damage or have intolerance to antihypertensive drugs will need to be assessed more frequently.
- Once target BP has been reached for 2 consecutive visits, follow-up should be conducted at 3–6 month intervals.
- Empower patients to self-monitor BP so that they can alert their health care team if BP control is lost.

VII. Choice of drug therapy for patients with compelling indications for specific agents

- Initial therapy recommendations, additional or combination treatment options and contraindications for select health indications are summarized in Table 4.
- Lifestyle modification and other nonpharmacologic measures are still to be used in addition to these drug therapy recommendations.
- Those requiring information on the treatment of hyperaldosteronism or pheochromocytoma are referred to the full 2011 CHEP Guidelines for the Treatment of Hypertension.[10]
- Patients presenting with a systolic BP ≥20 mmHg or diastolic ≥10 mmHg above target may require combination therapy using 2 first-line agents as initial treatment. Use caution if initiating combination therapy in patients more likely to experience a substantial fall in BP or unable to tolerate such a drop (e.g., elderly).

Recommendations

- Pharmacists should play a key role in ensuring patients receive recommended drug therapy agents based on compelling indications.
- Patients receiving drug therapy for hypertension should have their BP assessed every 4–8 weeks until their BP is at target for 2 consecutive readings, after which assessments can be performed at 3–6 month intervals.
- Pharmacists should also regularly monitor for drug interactions with prescribed therapy and assess adherence in patients receiving antihypertensive drug therapy, particularly in those not achieving BP control.
- Pharmacists should assess adherence in patients found to be late in requesting/receiving prescription refills.

VIII. Follow-up and monitoring

- Patients whose BP is elevated, but not at the cut-off for diagnosis of hypertension, should have their BP re-assessed annually.
- Patients receiving antihypertensive drug treatment should be seen every 4–8 weeks until readings on 2 consecutive visits are below target. Patients who are symptomatic or have severe hypertension, target organ damage or intolerance to antihy-

BOX 2 New evidence on the management of hypertension in the 2011 Recommendations

Hypertension management in the setting of acute stroke: Elevated blood pressure in the first 24–72 hours of a stroke is usually reaction to the stroke, rather than an acute cause and tends to subside spontaneously to baseline levels. In acute stroke, a U-shaped prognostic curve for BP exists, with very low or very high BP associated with a poorer clinical outcome.[14] Elevated BP is associated with hematoma expansion in the situation of intracerebral hemorrhage, whereas in an acute ischemic stroke, both very high and very low BPs are associated with poor patient outcomes. CHEP recommends the guidelines of the Canadian Stroke Network for management of hypertension in acute stroke[15] including:

- Ischemic stroke and patient eligible for thrombolytic therapy — Very high BP (>185/110 mmHg) should be treated concurrently in patients receiving thrombolytic therapy to reduce the risk of secondary intracranial hemorrhage.
- Ischemic stroke and patient not eligible for thrombolytic therapy — Routine treatment of hypertension in acute stroke should not be routinely done. Extreme hypertension (>220/120 mmHg) may be reduced by 15%–25% over the first 24 hours, with gradual reduction thereafter.
- After 72 hours of acute stroke, controlling BP to <140/90 mmHg is very important in preventing a recurrent stroke or TIA.

Cancer and angiotensin receptor blockers: A recent published meta-analysis combining cancer-related findings from 8 clinical trials found an increased risk of reported new cancers in patients taking an angiotensin receptor blocker.[16] At this time, CHEP maintains the current indications for use of ARBs consistent with the findings of the FDA that the benefits of these medications continue to outweigh their potential risk (www.fda.gov/Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsandProvid ers/ucm218845.htm#Additional_Information_for_Healthcare_Professionals). CHEP commits to further review of this issue as additional information becomes available.

Hypertension in Diabetes — The ACCORD Trial: Current BP target for patients with diabetes is <130/80 mmHg. In 2010 the results of the blood pressure sub-study of the ACCORD trial were published,[17] which examined whether a lower systolic BP target of <120 mmHg is preferable to <140 mmHg in 4733 patients. The main result of the sub-study showed no significant benefit for intensive BP lowering to <120 mmHg versus <140 mmHg on a composite outcome of non-fatal myocardial infarction, non-fatal stroke and cardiovascular death. Stroke was reduced by 42% as a result of intensive BP lowering ($p = 0.01$), however, a higher rate of adverse effects from the additional antihypertensive therapy (e.g. hypotension and hypokalemia) was noted in those receiving intensive lowering. At this time, CHEP has maintained the target BP for patients with diabetes at <130/80 mmHg for 2011 for 3 reasons:

1. There were many fewer cardiovascular events in the ACCORD trial patients than would be expected based on event rates of previous studies. Since the power of a study to detect a difference between treatment groups is calculated based on expected event rates, this reduced the study's power and limited its ability to detect a statistically significant difference between intensive and normal BP treatment groups.
2. A statistical interaction between treatments affects the interpretation of a study. Evidence exists that the degree of glycemic target achieved in the study affected its cardiovascular event rates with no benefit of more intensive BP reduction in the intensive glucose treatment arm, but a statistically significant benefit of intensive BP-lowering in the standard glucose treatment arm. Further evaluation of this interaction is needed to properly interpret the results.
3. The trial did not study intensive BP-lowering relative to our currently recommended target of 130 mmHg, so it does not directly inform whether or not our target should be maintained.

pertensive drugs may need to be assessed more frequently.
- Once target BP has been reached for 2 consecutive visits, follow-up should be conducted at 3–6 month intervals.

Recommendations

- As the most frequently seen health care professional, pharmacists have a responsibility to follow up with patients with high-normal blood pressure and with hypertension.
- Pharmacists should use medication refill visits as a unique opportunity to assess adherence, tolerability and response to antihypertensive therapy.
- For people who are late in refilling their prescription(s), specifically ask about difficulties they may have remembering to take their medication and if they require any assistance (e.g., compliance packaging, medication regimen simplification).

IX. Home measurement of blood pressure

- Home BP measurement can be used in the diagnosis and regular monitoring of hypertension and is especially recommended for patients with diabetes, chronic kidney disease,

TABLE 4 Drug therapy recommendations in select indications

Indication	Initial therapy recommendations	Other options	Avoid	Additional recommendations
Diabetes mellitus (BP target <130/80 mmHg)				
Normal urinary albumin excretion* and no chronic kidney disease	• ACE inhibitor or ARB (recommended agents due to additional renal benefits) • Dihydropyridine CCB • Thiazide or thiazide-like diuretic	• Cardioselective beta-blocker (acebutolol, atenolol, bisoprolol, metoprolol) • Non-dihydropyridine CCB • Additional antihypertensive drugs should be used if target BP not achieved with standard-dose monotherapy	• Combination of ACE inhibitor + ARB	
Albuminuria*	• ACE inhibitor or ARB	• Addition of dihydropyridine CCB is preferred over thiazide		A loop diuretic could be considered in hypertensive CKD patients with extracellular fluid volume overload.
Cardiovascular disease (BP target <140/90 mmHg unless otherwise stated)				
Isolated systolic hypertension	• Thiazide diuretic • Long-acting dihydropyridine CCB • ARB	• If additional effect is required, 2 or more of the first-line agents should be used • Only if combination therapy with the first-line agents fails to achieve target BP should other classes of drugs (alpha-blockers, ACE inhibitors, beta-blockers in patients <60 years of age, centrally acting agents or non-dihydropyridine CCBs) be added or substituted		
Ischemic heart disease	• ACE inhibitor or ARB • Beta-blockers are preferred for patients with stable angina	• CCBs	• Short-acting nifedipine • Combination of ACE inhibitor and ARB unless co-existing systolic heart failure	
Recent myocardial infarction (STEMI or NSTEMI)	• Beta-blocker + ACE inhibitor (or ARB if patient is intolerant)	• CCBs can be substituted for beta-blockers if contraindicated or ineffective	• Non-dihydropyridine CCBs (diltiazem, verapamil) if heart-failure co-exists	
Systolic heart failure	• ACE inhibitor (or ARB if patient is intolerant) • Beta-blocker	• Aldosterone antagonists (for patients with NYHA Class III or IV symptoms or post-myocardial infarction) • Thiazide or loop diuretics • Combination of hydralazine + isosorbide dinitrate if ACE inhibitors and ARBs are contraindicated or not tolerated • Combination ACE inhibitor + ARB can be used — monitor for hypotension, hyperkalemia or worsening renal function • Dihydropyridine CCBs		

TABLE 4 Drug therapy recommendations in select indications *(continued)*

Indication	Initial therapy recommendations	Other options	Avoid	Additional recommendations
Cerebrovascular disease	• ACE inhibitor + diuretic		• Combination of an ACE inhibitor and ARB	• Consider initiation of antihypertensive therapy after the acute phase of a stroke or TIA, controlled to <140/90 mmHg. • Caution is advised in deciding whether to lower BP in the acute stroke phase. Therapy should be chosen to avoid precipitous falls in BP. • See "New Evidence" section of guidelines.
Left ventricular hypertrophy	• ACE inhibitor or ARB • Long-acting CCB • Thiazide diuretic		• Direct arterial vasodilators (e.g., hydralazine, minoxidil)	
Non-diabetic proteinuric chronic kidney disease (urinary protein >500 mg/24 hours or ACR >30 mg/mmol)	• ACE inhibitor (or ARB if patient is intolerant)	• Thiazide diuretic • Loop diuretic (if volume overload present) • Combination therapy with other agents is needed to achieve target in many patients	• Combination of an ACE inhibitor and ARB	• Target BP is <130/80 mmHg.
Renovascular disease	• Treat in the same manner as hypertension without compelling indications, except for caution in the use of ACE inhibitors or ARBs due to the risk of acute renal failure		Avoid ACE inhibitors or ARB if bilateral renal artery stenosis or unilateral disease with solitary kidney	• Close follow-up and referral necessary for patients with uncontrolled BP despite therapy with ≥3 drugs or deteriorating kidney function.

Legend: CCB = calcium channel blocker; ARB = angiotensin receptor blocker; ACE = angiotensin-converting enzyme; STEMI = ST-elevation myocardial infarction; NSTEMI = non-ST-elevation MI; TIA = transient ischemic attack; ACR = albumin to creatinine ratio.
* Normal urinary albumin excretion defined as albumin/creatinine ratio (ACR) <2.0 mg/mmol in men and <2.8 mg/mmol in women. Albuminuria defined as ACR exceeding these limits

suspected nonadherence, white-coat hypertension or masked hypertension (BP controlled in the office but not at home).
- Home values of ≥135 systolic and ≥85 diastolic should be considered elevated and associated with a similar increased mortality risk as office readings of ≥140/90.
- If white-coat hypertension is suspected due to the presence of elevated in-office readings and target readings at home, ambulatory blood pressure monitoring should be considered before making treatment decisions.
- Proper uses and technique for home blood pressure monitoring (HBPM) are published elsewhere.[12]

Recommendations

- Pharmacists should encourage the use of HBPM in all eligible patients.
- Pharmacists should sell only approved monitoring devices, educate patients on proper technique and knowledge of their BP targets, encourage patients to have the accuracy of their home monitors checked against a calibrated device, and ensure in-pharmacy BP kiosks are calibrated and maintained according to manufacturer's specifications.

X. Patient education

- As the most frequently seen health care professionals, pharmacists play a pivotal role in patient education in both the prevention and management of hypertension.
- Hypertension Canada has a number of patient education materials available on their website at **www.hypertension.ca**. Patients with Internet access should also be encouraged to sign up at **www.mybpsite.ca** to access current evidence-based hypertension resources.
- Strategies to improve patient adherence are outlined in Table 5.
- Monitoring refill frequency may help identify patients who have difficulties adhering to their antihypertensive regimen.
- Patients should be knowledgeable of their blood pressure target, current blood pressure, risk factors for cardiovascular disease and treatment plan for hypertension.

Recommendations

- Pharmacists, in conjunction with the health care team, should routinely offer education, particularly in the areas of drug information, lifestyle modification and medication adherence and should make patients aware of easy-to-use resources provided by Hypertension Canada.

XII. What is "Hypertension Canada"?

Hypertension Canada is a newly integrated organization joining the resources and expertise of Blood Pressure Canada, the Canadian Hypertension Society and the Canadian Hypertension Education program to form a single authoritative voice on hypertension in Canada. The mission of this volunteer-based, not-for-profit organization is to "[Advance] health by the prevention and control of high blood pressure through research, advocacy, education and knowledge development and translation." For example, a major new effort by Hypertension Canada is to develop a Public Policy Committee to work with both government and nongovernment organizations to promote healthy public policy such as standardized food procurement policies and the development of warnings for foods containing high quantities of sodium, saturated fats, simple sugars and calories.

Health professionals can sign up at **www.hypertension.ca** to receive updates on hypertension recommendations and educational resources as they are made available. In addition, "Hypertension Champion" training sessions are hosted by

TABLE 5 Strategies to improve patient adherence

Assist your patients to adhere to their medications by: • Tailoring pill-taking to fit patients' daily habits • Simplifying medication regimens to once-daily dosing (whenever possible) • Replacing 2 antihypertensive agents with a fixed-dose combination (where available and appropriate), provided it is the same combination the patient is already taking • Utilizing unit-of-use packaging (of several medications to be taken together) • Identifying potential barriers to adherence
Assist your patients in getting more involved in their treatment by: • Encouraging greater patient responsibility/autonomy in monitoring their blood pressure and adjusting their prescriptions • Educating patients and their families about their disease and treatment regimens
Improve your management in the pharmacy and beyond by: • Assessing adherence to pharmacological and nonpharmacological therapy at every visit • Reassessing patients at least every 2 months for those patients with a blood pressure above target • Encouraging adherence with therapy by out-of-office contact (e.g., phone or mail), particularly during the first 3 months of therapy • Coordinating with work-site health care givers to improve monitoring of adherence with pharmacological and lifestyle modification prescriptions • Using electronic medication compliance aids • Adopting a multidisciplinary team approach

Key messages

1. Assess blood pressure and adherence at all appropriate visits.
2. Promote a healthy lifestyle to lower blood pressure and reduce the risk of cardiovascular disease at each visit with interventions to reduce high dietary sodium, for smoking cessation, to reduce abdominal obesity, to promote a healthy weight, to increase physical activity and to manage dyslipidemia and dysglycemia.
3. Treat blood pressure to <140/90 mmHg in most people and to <130/80 mmHg in people with diabetes or chronic kidney disease using a combination of drugs and lifestyle modifications.
4. Advocate for healthy public policies to prevent hypertension and advance the health of patients and populations.
5. Keep up to date with resources for the prevention and control of hypertension by registering at **www.hypertension.ca**.

CHEP throughout the year to enable health care professionals to become leaders for hypertension education in their communities. Additional information on this and other programs/services can be found at **www.hypertension.ca**. ■

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