What's New?

2017 Hypertension Canada Guidelines for the Management of Hypertension





Hypertension CANADA

What's New?

About This Booklet

This booklet highlights key advancements and important, enduring aspects of the Hypertension Canada Guidelines, the nation's clinical practice guidelines for the management of hypertension. Developed by an expert volunteer network, the guidelines are evidence-based, rigorously reviewed, and updated annually to keep Canada's health care professionals informed of best-practices in hypertension management. This booklet serves as a quick reference for health care professionals. The full guidelines with supporting evidence can be referenced at guidelines.hypertension.ca.

Key Goal: Prevention

Health care professionals should continue to assess blood pressure at all appropriate visits. Health behaviour modifications can lower blood pressure and prevent the development of hypertension. Health care providers are advised to encourage smoking cessation, physical activity, healthy diets, sodium restriction and increased dietary potassium intake. Health care professionals should encourage reduced exposure to behavioural, environmental and societal risk factors to prevent and control hypertension.

Key Goal: Attaining Treatment Targets

In patients with documented hypertension, attaining blood pressure targets is vital to prevent cardiovascular and cerebrovascular complications [page 11]. Therefore, a target of <140/90 mmHg should be attained in most hypertensive patients. In high-risk patients, a systolic target of ≤120 mmHg should be considered. In persons with diabetes, a target of <130/80 mmHg is recommended. This can be done through health behaviour modification and, if necessary, with medication *[pages 9-11]*.

What is New in 2017?

Treatment thresholds are no longer based on age.
Adults without evidence of macrovascular disease or target organ damage, regardless of age, should be considered for medical therapy when DBP is ≥100mmHg or SBP is ≥160 mmHg. When macrovascular disease or target organ damage is present, medical therapy should be considered when DBP ≥90 mmHg and SBP ≥140 mmHg.

Long acting diuretics and single pill combinations are recommended as first-line therapy in adults with uncomplicated hypertension.
Thiazide and non-thiazide diuretics continue to be a first line therapy (together with CCB, ACEi, ARBs and beta-blockers for <60 y) for adults with uncomplicated hypertension, but long-acting diuretics (chlorthalidone and indapamide) are preferred to reduce the risk of cardiovascular events and achieve greater BP reductions. Low-dose single pill combinations are also preferred as first line therapy to reduce BP and prevent cardiovascular events relative to single agent approaches, and reduce the risk of adverse events.

Additional New Guidelines

- Guidelines for the screening and treatment of Fibromuscular Dysplasia (FMD) have been provided.
- Caution should be taken to avoid excessive DBP lowering in persons with CAD and LVH. Excessive lowering of DBP may increase the risk of myocardial ischemia.
- In patients with hyperacute intracerebral hemorrhage SBP lowering to <140 mmHg is not recommended

What's still really important in 2017?

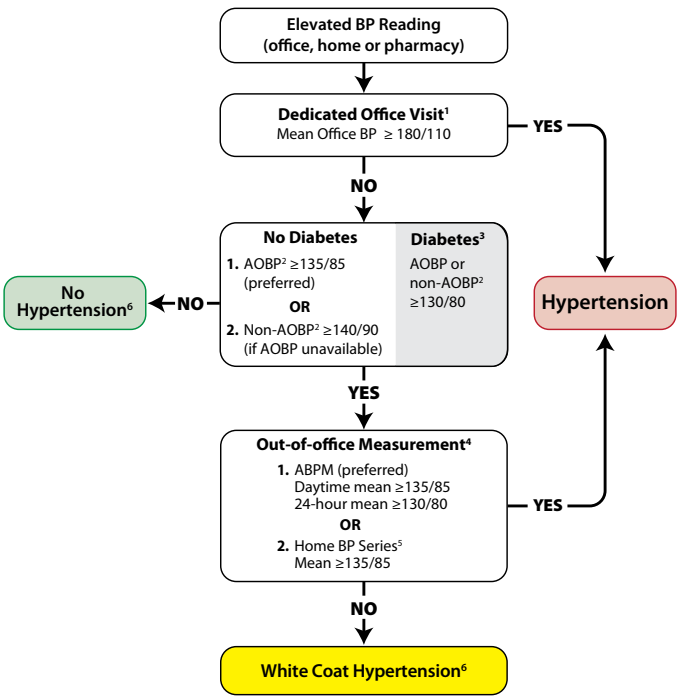
- Health behaviour modifications are a critical component of hypertension prevention and management.
- The most important step in prescription of antihypertensive therapy is achieving patient "buy-in".
- Global cardiovascular risk assessment and optimization is important in all hypertensive patients.

Stay Informed

To keep abreast of information and advances in hypertension, subscribe to Hypertension Canada's free newsletter, eINFO, at www.hypertension.ca.

Measure Blood Pressure in All Adults at All Appropriate Visits

Hypertension Diagnostic Algorithm



Notes:

1. If AOBP is used, use the mean calculated and displayed by the device. If non-AOBP (see note 2) is used, take at least three readings, discard the first and calculate the mean of the remaining measurements. A history and physical exam should be performed and diagnostic tests ordered.
2. AOBP = Automated Office BP. This is performed with the patient unattended in a private area.
   Non-AOBP = Non-automated measurement performed using an electronic upper arm device with the provider in the room.
3. Diagnostic thresholds for AOBP, ABPM, and home BP in patients with diabetes have yet to be established (and may be lower than 130/80 mmHg).
4. Serial office measurements over 3-5 visits can be used if ABPM or home measurement not available.
5. Home BP Series: Two readings taken each morning and evening for 7 days (28 total). Discard first day readings and average the last 6 days.
6. Annual BP measurement is recommended to detect progression to hypertension.

ABPM: Ambulatory Blood Pressure Measurement

AOBP: Automated Office Blood Pressure

Treatment of Adults with Systolic/Diastolic Hypertension Without Compelling Indications for a Specific Agent

TARGET <135/85 mmHg (automated measurement method)

Initial Treatment

Health Behaviour Management

- Thiazide/ thiazide-like diuretic
- ACEI
- ARB
- Long-acting CCB
- Beta-blocker*
- Single pill combination**

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

****Recommended SPC choices are those in which an ACE-I is combined with a CCB, an ARB with a CCB, or an ACE-I or ARB with a diuretic**

Renin angiotensin system (RAS) inhibitors are contraindicated in pregnancy and caution is required in prescribing to women of child bearing potential

Combination Therapy

To achieve optimal blood pressure targets:

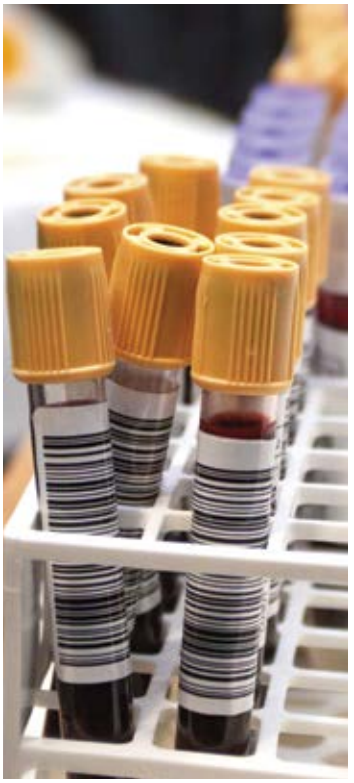
- Multiple drugs are often required to reach target levels, especially in patients with Type 2 diabetes.
- Replace multiple antihypertensive agents with single pill combination therapy.
- Low doses of multiple drugs may be more effective and better tolerated than higher doses of fewer drugs.
- Reassess patients with uncontrolled blood pressure at least every two months.
- A combination of two first-line agents may also be considered as initial treatment of hypertension.
- The combination of ACE inhibitors and ARBs should not be used.

Suspected Resistant Hypertension

- Consider white coat hypertension, white coat effect and non-adherence.
- Diuretic therapy should be considered if not already prescribed or contraindicated.
- Beta-blockers, when used in addition to ACE inhibitors or ARB, have not been shown to have a clinically important effect on blood pressure.
- Monitor creatinine and potassium when combining potassium sparing diuretics, ACE inhibitors and/or ARBs.
- Consider referral to a hypertension specialist if blood pressure is still not controlled after treatment with three antihypertensive medications.

ACE: Angiotensin-converting enzyme
ARB: Angiotensin receptor blocker
ASA: Acetylsalicylic acid
CCB: Calcium channel blocker

Routine Lab Testing



Preliminary Investigations of patients with hypertension

1. Urinalysis
2. Blood chemistry (potassium, sodium and creatinine)
3. Fasting blood glucose and/or glycated hemoglobin (A1c)
4. Serum total cholesterol, low-density lipoprotein (LDL), high-density lipoprotein (HDL), non-HDL cholesterol, and triglycerides; lipids may be drawn fasting or non-fasting
5. Standard 12-lead ECG

Routine testing of microalbuminuria in patients with hypertension but without diabetes or renal disease is not supported by current evidence.

Follow-up investigations of patients with hypertension

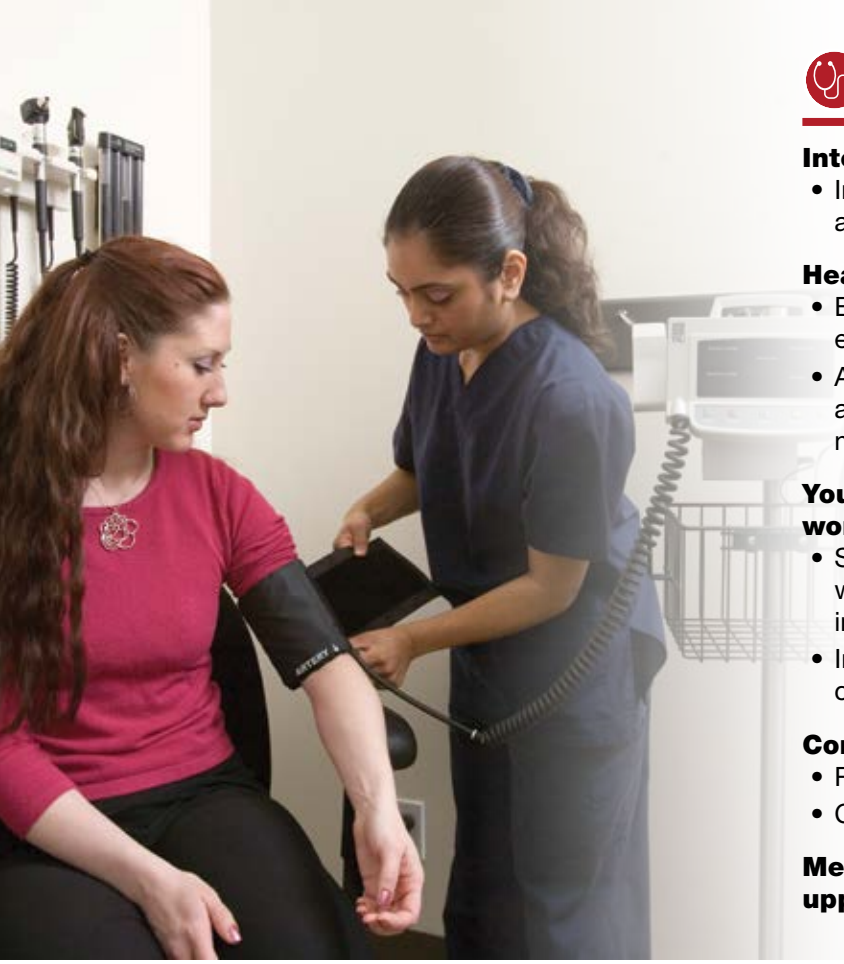
During the maintenance phase of hypertension management, tests (including electrolytes, creatinine, glucose/A1c, and fasting lipids) should be repeated with a frequency reflecting the clinical situation.

Diabetes develops in 1-3% per year of those with drug-treated hypertension. The risk is higher in those with one or more of the following: treated with a diuretic or beta-blocker, impaired fasting glucose or impaired glucose tolerance, obesity (especially abdominal), dyslipidemia, sedentary lifestyle and poor dietary habits. Screen adults with hypertension with annual fasting plasma glucose testing and follow the screening recommendations.

For diabetes management see: *Can J Diabetes*. 2013;37(suppl 1):S1-S212

Health Behaviour Recommendations

Objective	Recommendation	Comment
Being More Physically Active	An accumulation of 30-60 minutes of dynamic exercise of moderate intensity (such as walking, cycling, swimming) four to seven days per week in addition to the routine activities of daily living. Higher intensities of exercise are no more effective at BP lowering but may produce other cardiovascular benefits. For non-hypertensive or stage 1 hypertensive individuals, the use of resistance or weight training exercise (such as free weight lifting, fixed weight lifting, or hand grip exercise) does not adversely influence BP.	Should be prescribed to both hypertensive and normotensive individuals for prevention and management of hypertension.
Weight Reduction	A healthy BMI (18.5 - 24.9 kg/m^2) and waist circumference (<102 cm for men and <88 cm for women) is recommended for non-hypertensive individuals to prevent hypertension and for hypertensive patients to reduce BP.	Encourage multidisciplinary approach to weight loss, including dietary education, increased physical activity and behavior modification.
Moderation in Alcohol Intake	Limited consumption: 0-2 standard drinks/day • Men: < 14 drinks/week • Women: < 9 drinks/week	Should be prescribed to both hypertensive and normotensive individuals for prevention and management of hypertension.
Eating Healthier	DASH-like diet: • High in fresh fruits, vegetables, dietary fibre, non-animal protein (e.g. soy) and low-fat dairy products. Low in saturated fat and cholesterol. • To decrease BP in hypertensive patients, consider increasing dietary potassium.	The DASH-like diet should be prescribed to both hypertensive and normotensive individuals for prevention/management of hypertension.
Relaxation Therapies	Individualized cognitive behavior interventions are more likely to be effective when relaxation techniques are employed.	For selected patients in whom stress plays a role in elevating BP.
Smoking Cessation	Advise smokers to quit and offer them specific pharmacotherapy to help them quit. Abstinence from smoking. A smoke-free environment.	A global cardiovascular risk reduction strategy.



Points of Practice

Interprofessional team care

- Involvement of an interprofessional team improves adherence.

Health behaviour changes are important to make

- Effective health behaviour change requires patient education, engagement and longitudinal support.
- All people living with hypertension require lifestyle assessment and ongoing support to initiate and maintain lifestyle changes.

Younger patients remain undertreated and older women are less likely to achieve target

- Start pharmacotherapy for adults with hypertension with multiple cardiovascular risks factors immediately, in addition to lifestyle changes.
- In particular, reduce risk factors in smokers who cannot quit.

Combination therapy of ACE inhibitor with ARB

- Reassess all patients on this combination.
- Consider other combinations.

Measurement using electronic (oscillometric) upper arm devices is preferred over auscultation

Additional Resources

Hypertension Canada

guidelines.hypertension.ca

- Full Hypertension Canada Guidelines and app
- Teaching slide decks and videos
- Patient education resources

Other Websites:

Diabetes Canada

www.guidelines.diabetes.ca

Canadian Cardiovascular Society

www.ccsguidelineprograms.ca

- Includes guidelines for dyslipidemia, atrial fibrillation, heart failure and other cardiovascular illnesses

	Initial Therapy	Second-line Therapy	Notes and/or Cautions
Hypertension Without Other Compelling Indications for a Specific Agent			
Diastolic hypertension with or without systolic hypertension	Monotherapy or SPC. Recommended monotherapy choices include thiazide/ thiazide-like diuretics (with longer-acting diuretics preferred), ß blockers, ACE inhibitors, ARBs, or long-acting CCB. Recommended SPC choices include combinations of an ACE inhibitor with CCB, ARB with CCB, or ACE inhibitor/ARB with a diuretic. (Consider ASA and statins in selected patients.)	Further addition of first-line drugs	Not recommended for monotherapy: Alpha blockers, beta-blockers in those ≥60 years of age, ACE inhibitors in black people. Hypokalemia should be avoided in those prescribed diuretics. ACE inhibitors, ARBs and direct renin inhibitors are potential teratogens, and caution is required if prescribing to women with childbearing potential. Combination of an ACE inhibitor with an ARB is not recommended.
Isolated systolic hypertension without other compelling indications	Thiazide/thiazide-like diuretics, ARBs or long-acting dihydropyridine CCBs.	Combinations of first-line drugs.	Same as diastolic hypertension with or without systolic hypertension.
Diabetes Mellitus			
Diabetes mellitus with microalbuminuria*, renal disease, cardiovascular disease or additional cardiovascular risk factors.	ACE inhibitors or ARBs	Addition of dihydropyridine CCB is preferred over thiazide/thiazide-like diuretic.	A loop diuretic could be considered in hypertensive CKD patients with extracellular fluid overload.
Diabetes mellitus not included in the above category.	ACE inhibitors, ARBs, dihydropyridine CCBs or thiazide/thiazide-like diuretics.	Combination of first-line drugs. If combination with ACE-inhibitor is being considered, a dihydropyridine CCB is preferable to a thiazide/thiazide-like diuretic.	Normal urine microalbumin to creatinine ratio <2.0 mg/mmol

	Initial Therapy	Second-line Therapy	Notes and/or Cautions
Cardiovascular Disease			
Coronary artery disease	ACE inhibitors or ARBs; beta-blockers or long-acting CCBs for patients with stable angina.	When combination therapy is being used for high risk patients, an ACE inhibitor/ dihydropyridine CCB is preferred.	Avoid short-acting nifedipine. Combination of an ACE-inhibitor with an ARB is specifically not recommended. Exercise caution when lowering SBP to target if DBP is ≤60 mmHg.
Recent myocardial infarction	Beta-blockers and ACE inhibitors (ARBs if ACE inhibitor intolerant).	Long-acting CCBs if beta-blocker contraindicated or not effective.	Non-dihydropyridine CCBs should not be used with concomitant heart failure.
Heart failure	ACE inhibitors (ARBs if ACE inhibitor intolerant) and beta-blockers. Aldosterone antagonists (mineral corticoid receptor antagonists) may be added for patients with a recent cardiovascular hospitalization, acute myocardial infarction, elevated BNP or NT- proBNP level or NYHA Class II to IV symptoms.	ACE inhibitor and ARB combined. Hydralazine/ isosorbide dinitrate combination if ACE inhibitor and ARB contraindicated or not tolerated. Thiazide/thiazide-like or loop diuretics are recommended as additive therapy. Dihydropyridine CCB can also be used.	Titrate doses of ACE inhibitors and ARBs to those used in clinical trials. Carefully monitor potassium and renal function if combining any of ACE inhibitor, ARB and/or aldosterone antagonist.
Left ventricular hypertrophy	ACE inhibitor, ARB, long-acting CCB or thiazide /thiazide-like diuretics.	Combination of additional agents.	Hydralazine and minoxidil should not be used.
Past stroke or TIA	ACE inhibitor and a thiazide/thiazide-like diuretic combination.	Combination of additional agents.	Treatment of hypertension should not be routinely undertaken in acute stroke unless extreme BP elevation. Combination of an ACE inhibitor with an ARB is not recommended.
Non-diabetic chronic kidney disease			
Nondiabetic chronic kidney disease with proteinuria†	ACE inhibitors (ARBs if ACE inhibitor intolerant) if there is proteinuria. Diuretics as additive therapy.	Combinations of additional agents.	Carefully monitor renal function and potassium for those on an ACE inhibitor or ARB. Combinations of an ACE inhibitor and ARB are not recommended in patients without proteinuria.
Renovascular disease	Does not affect initial treatment recommendations. Atherosclerotic renal artery stenosis should be primarily managed medically, while revascularization should be considered for renal fibromuscular dysplasia.	Combinations of additional agents.	Caution with ACE inhibitors or ARBs if bilateral renal artery stenosis or unilateral disease with solitary kidney. Renal artery angioplasty and stenting could be considered for patients with renal artery stenosis and complicated, uncontrolled hypertension.

Considerations in the Individualization of Antihypertensive Therapy

	Initial Therapy	Second-line Therapy	Notes and/or Cautions
Other Conditions			
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 hypertensive patients ≥50 years. Advise on smoking cessation and use pharmacotherapy for smoking cessation if indicated.		Caution should be exercised with the ASA recommendation if blood pressure is not controlled.

* Microalbuminuria is defined as persistent albumin to creatinine ratio [ACR] >2.0 mg/mmol in men and women.

† Proteinuria is defined as urinary protein >500 mg/24hr or albumin to creatinine ratio [ACR] >30 mg/mmol.

ACE: Angiotensin-converting enzyme
ARB: Angiotensin receptor blocker
ASA: Acetylsalicylic acid
CCB: Calcium channel blocker
CKD: Chronic kidney disease
NYHA: New York Heart Association
TIA: Transient ischemic attack.
SPC: Single pill combination.

Blood Pressure Treatment Targets

Setting	Location or Condition	Target	
		SBP mm/Hg	DBP mm/Hg
Home:	Home blood pressure and daytime ABPM*	<135/85	<85
Office:	**High Risk****	≤120	NA
	Diabetes	<130	<80
	All others (including CKD)	<140	<90

*ABPM: Ambulatory Blood Pressure Monitoring

** High Risk: having at least one of the following factors:
a) Clinical or subclinical cardiovascular disease, **b)** Chronic kidney disease (nondiabetic nephropathy, proteinuria <1 g/d, estimated glomerular filtration rate 20-59 mL/min/1.73 m^2),
c) Estimated 10-year global Framingham risk >15%; OR **d)** Age ≥75 years.

Improve Medication Adherence

Adherence can be improved by a multi-pronged approach:

1) At every visit, assist your patient to adhere using a multi-pronged approach

a) Tailor and simplify pill-taking to fit your patient's daily habits

b) Utilize single pill combinations

c) Utilize unit-of-use packaging (e.g. blister packaging)

2) Assist your patient in getting more involved in his/her treatment

a) Encourage greater responsibility/autonomy in monitoring his/her blood pressure and reporting the results, so you may adjust his/her prescriptions as needed

3) Improve your management in the office and beyond

a) Educate your patient and his/her family about hypertension and its treatment

b) Inform your patient of their global risk to improve the effectiveness of risk factor modification using vascular or cardiovascular age

c) Adherence to an antihypertensive prescription can be improved by an interprofessional team approach

Choose a diet high in fresh fruits, vegetables, dietary fibre, non-animal protein (e.g. soy) and low-fat dairy products, low in saturated fat and cholesterol.

Beyond the Salt Shaker: Key Messages for Health Care Professionals

1. Dietary sodium is an important contributor to high blood pressure.
2. Canadian sodium intake is well above recommended levels.
3. Lowering sodium intake is good for public health.
4. Processed foods are our main source of dietary sodium.
5. Health care professionals can play a key role.

Guideline for Sodium Intake

To decrease blood pressure, consider reducing sodium intake towards 2,000 mg per day.

Guideline for Potassium Intake

In patients not at risk of hyperkalemia, increase dietary potassium intake to reduce BP.

Stay abreast of advances in hypertension 14

Created by professionals, for professionals, Hypertension Canada's educational resources help keep you at the leading edge in hypertension prevention, diagnosis and care. Dedicated solely to the prevention and control of hypertension and its complications, we offer an array of programs and resources:

- Hypertension Canada Guidelines
- Annual, accredited scientific congress and primary care program
- Learning and teaching resources for professionals and patients

Join the Hypertension Canada Community

Hypertension Canada's membership provides like-minded professionals with a community that shapes research, professional and public education and public policy. Members gain access to valuable benefits that include free patient resources, discounted registration for education programs and annual Congress, trainee travel awards, and opportunities to make a difference as expert volunteers and advocates. Visit www.hypertension.ca to join us today.

Information For Patients

Hypertension information resources designed for the public can be accessed online by patients and health care professionals at www.hypertension.ca. Bulk orders of 25 or more copies can be requested by members at www.hypertension.ca.

2017 Key Messages

- All Canadian adults should have their blood pressure assessed at all appropriate clinical visits.
- Automated measurement is preferred to manual measurement.
- In the office, multiple unattended automatic measurements are recommended.
- Out-of-office measurement should be performed to confirm the initial diagnosis of hypertension.
- Optimum management of the hypertensive patient requires assessment and communication of overall cardiovascular risk using an analogy like ‘vascular age’.
- Identify the threshold for initiating therapy; treat to target.
- Health behaviour modification is effective in preventing hypertension, treating hypertension and reducing cardiovascular risk.
- Combinations of both health behaviour changes and drugs are generally necessary to achieve target blood pressures.
- Home BP monitoring is an important tool in self-monitoring and self-management.
- Focus on adherence.

Published by Hypertension Canada as a professional service with the financial support of the Government of Canada and unrestricted support from Servier Canada Inc.

Canada

SERVIER

VIHD00517E

For the complete version of the 2017 Hypertension Canada Guidelines please refer to our website at www.hypertension.ca

Hypertension Canada
3780 - 14th Avenue, Suite 211
Markham, ON L3R 9Y5

Tel : 905-943-9400
Fax : 905-943-9401
Email : info@hypertension.ca

www.hypertension.ca
HCP1030EN
Charitable Registration Number: 897016275RR0001