

2010 Canadian Hypertension Education Program recommendations

An annual update

On behalf of the Canadian Hypertension Education Program

Hypertension is one of the biggest health issues facing our country. In 2007, 5.7 million Canadians were diagnosed with hypertension and more than 5 million of them were using pharmacotherapy to treat their hypertension.¹ For the last decade, hypertension has been the leading diagnosis for adult visits to physicians, and the proportion of total visits to physicians for hypertension is increasing.² The World Health Organization has indicated that increased blood pressure is the leading risk factor for death, predicting an epidemic of hypertension, and is advocating prevention and treatment programs as a priority.^{3,4} In 2000, there were more than 7 million deaths worldwide attributed to suboptimal blood pressure, and increased blood pressure is estimated to consume 10% of health care costs in developed countries such as Canada.^{5,6}

For the Canadian Hypertension Education Program (CHEP), 2010 marks the 11th consecutive year that the recommendations for the management of hypertension have been updated. The program was developed to assist primary care providers in better managing and preventing hypertension among their patients. As evidenced by recent population-based surveys, Canada is one of the world's leading countries in the prevention and control of hypertension.⁷ Both a decrease in cardiovascular disease rates and an increase in treatment of hypertension occurred at the same time CHEP was initiated in 1999.^{8,9} The success of the program is underlined by the fact that most developed countries have hypertension control rates well below those achieved in Canada.¹⁰

Nevertheless, there is still much progress that can be made in Canada to further reduce premature cardiovascular death and disability by improving hypertension management. Recent (unpublished) surveys have found that many health care professionals are still not aware of CHEP or its recommendations. Therefore, special efforts are being made to increase the accessibility of hypertension resources. Health care professionals can enrol at www.htnupdate.ca to get automated e-mail notices when new or updated hypertension resources are available for them or for their patients. They can also download current resources at

www.hypertension.ca/tools. A case-based interactive lecture series on clinically important hypertension topics will also be launched on the Internet so that health care professionals can learn and interact with top national hypertension experts. The lecture series will feature important clinical topics, include case presentations, and provide opportunities to ask questions and make comments. The lectures can be watched wherever the Internet is available. Physicians who sign up at www.htnupdate.ca will be notified when these lectures begin. The Canadian Hypertension Education Program is also developing a program to train community leaders in hypertension. **Table 1*** outlines current hypertension resources that are available for health care professionals and their patients with hypertension.

The CHEP team plans to develop a hypertension association for Canadians with high blood pressure. Meanwhile, patients should be encouraged to sign up for a 2010 membership at www.myBPSite.ca. Members will receive notices of updated and new educational resources, a regular newsletter, discount coupons to encourage a healthy lifestyle, access to lectures, and possibly, in the future, personalized advice from health care professionals. Members will also have the opportunity to provide opinions on whether new or revised hypertension and blood pressure resources are needed.

The following are the areas of clinical hypertension management in Canada that are emphasized by CHEP in 2010.

Hypertension in people with diabetes

More than 60% of people with diabetes die of cardiovascular disease, and up to 75% of specific diabetic complications are attributable to elevated blood pressure.¹¹ Treating hypertension in people with diabetes reduces premature death and disability by up to 50%.¹¹ The current target of less than 130/80 mm Hg is important, as more rather than less intensive hypertension treatment reduces premature death and cardiovascular events by 25% or more.¹² Combinations of lifestyle modification and 3 to 4 or more drugs might be required for blood



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*Tables 1 to 6, Boxes 1 to 3, and Figure 1 are available at www.cfp.ca. Go to the full text of this article online, then click on CFPlus in the menu at the top right-hand side of the page.

pressure control in people with diabetes. Prescription of an angiotensin-converting enzyme (ACE) inhibitor or an angiotensin receptor blocker (ARB) is recommended in all people with diabetes who have hypertension (**Table 2**).* In the absence of microalbuminuria or macroalbuminuria, a diuretic or a long-acting calcium channel blocker (CCB) is also a suitable first-line drug therapy. If blood pressure is 150/90 mm Hg or higher, consider initiating therapy with a combination of 2 drugs. Diuretic therapy is generally necessary for blood pressure control when multiple drugs are used.¹³ Although many clinicians are uncomfortable prescribing diuretics to people with diabetes, possibly because diuretics cause a small increase in blood glucose, diuretics have been shown to be equally as effective as ACE inhibitors in preventing cardiovascular complications.¹⁴ Of note, quality of life usually improves in those people treated to lower blood pressure levels, and treatment is actually cost saving owing to the large reduction in cardiovascular events.¹⁵⁻¹⁷

Home measurement of blood pressure

Home measurement of blood pressure is recommended to increase patient self-efficacy. Home blood pressure readings more reliably predict the risk of cardiovascular outcomes than readings taken in a health care professional's office. Home blood pressure measurements can be used to confirm the diagnosis of hypertension, improve blood pressure control, reduce the need for medications in those with white-coat effect, identify those with white-coat and masked hypertension, and improve medication adherence.¹⁸ Patient instructions for purchasing and using home blood pressure measurement devices can be found in **Box 1** and **Figure 1*** and at both www.hypertension.ca/tools and www.heartandstroke.ca/BP. A comprehensive instructional DVD on home measurement of blood pressure was developed in 2009 and can be downloaded from www.hypertension.ca/video.

Automated office measurement of blood pressure

For 2010, CHEP is recommending consideration of the use of fully automated office blood pressure devices. Automated office blood pressure readings are more closely correlated with ambulatory blood pressure readings and with target organ damage than manual readings are. A full review of office, home, and ambulatory blood pressure recommendations is expected by 2011.

Combination of antihypertensive medications

Most people require lifestyle changes and multiple antihypertensive drugs. When taking 2 drugs to lower blood pressure, combinations of a β -blocker, ACE inhibitor, or ARB produce less-than-additive hypotensive effects and should be avoided unless there is a specific indication

(eg, heart failure).^{19,20} If blood pressure is more than 20/10 mm Hg above target, initiating therapy with a combination of 2 first-line antihypertensive drugs is a first-line option.¹⁹ Using a combination tablet that contains 2 medications can improve adherence and lower drug costs, compared with prescribing the 2 drugs separately, and should be considered.

The Canadian Hypertension Education Program recommends that therapy based on the combination of an ACE inhibitor and a CCB be considered when combination therapy is required in select high-risk patients. A clinical trial was published in 2009 that showed an ACE inhibitor-CCB regimen was superior to an ACE inhibitor-thiazide diuretic regimen in hypertensive patients who had previous vascular disease or who had other vascular risk factors.²¹ The trial results generated considerable discussion and more subgroup analyses are expected. It is hoped new trials will be performed to validate the finding that some specific combinations of antihypertensive drugs are superior to others, given the strong evidence that current first-line drugs all result in similar reductions in cardiovascular events in those with hypertension who do not have compelling indications. In resistant hypertension, the use of a diuretic (sometimes in high doses) is usually required to achieve blood pressure control.¹³

ARBs or ACE inhibitors in those with ischemic heart disease

In many settings, ACE inhibitors and ARBs are interchangeable. In people with heart failure, previous stroke, or chronic kidney disease, ACE inhibitors are preferred.¹⁹ For 2010, CHEP recommends that most people with hypertension and ischemic heart disease be treated with either an ACE inhibitor or an ARB, but not both.¹⁹ Although effective when used individually, the combination of ACE inhibitors and ARB therapy should only be considered in select and closely monitored people with advanced heart failure or proteinuric nephropathy; CHEP specifically recommends not to combine ACE inhibitors with ARBs in people with uncomplicated hypertension, diabetes (without microalbuminuria or macroalbuminuria), chronic kidney disease (without nephropathy [ie, microalbuminuria or macroalbuminuria]), or ischemic heart disease (without heart failure).¹⁹

Reducing dietary sodium to prevent and treat hypertension

Given the linear association between sodium intake and blood pressure and the proven benefits of low-sodium diets, CHEP now recommends adults adhere to the government-recommended adequate intake levels of sodium (**Table 3**).^{*19} In the United States, high dietary sodium is estimated to be the seventh leading risk factor for death.²² A new trial of sodium restriction reported a reduction in blood pressure of 22/9 mm Hg in patients

with blood pressure above 140/90 mm Hg who were taking 3 antihypertensive drugs and who reduced sodium intake to 1060 mg daily from 5796 mg daily.²³ Advice on how to reduce sodium intake is available in **Box 2*** and patients can obtain more detailed information at www.lowersodium.ca or www.sodium101.ca. Health Canada plans to produce additional information for the public and patients later in 2010.

Key issues in the management of patients with hypertension

Assess blood pressure at all appropriate visits. Blood pressure increases with age, such that 50% of Canadians older than age 60 have hypertension. For those between the ages of 55 and 65 years with normal blood pressure, it is estimated that 9 in 10 will develop hypertension within an average lifespan.²⁴ All adults require ongoing assessment of blood pressure; Canadians with high-normal blood pressure in particular require annual blood pressure assessment, as more than half will develop hypertension within 4 years.²⁵

Assess and manage overall cardiovascular risk factors (eg, smoking, abdominal obesity, dyslipidemia, and dysglycemia [eg, glucose intolerance, diabetes], unhealthy eating, physical inactivity) in all people with hypertension. Approximately 90% of hypertensive Canadians have other cardiovascular risks.²⁶ Comprehensive screening and management of other risk factors in addition to hypertension can double the risk reduction in cardiovascular disease, lower the blood pressure target values (**Table 4**),* and change the types of antihypertensive medications recommended (**Table 2**).^{*} Many people with multiple cardiovascular risk factors or with cardiovascular disease have uncontrolled blood pressure values and, surprisingly, those who smoke are less, rather than more, likely to be treated.²⁷⁻²⁹ Pharmacotherapy has the most potential for the greatest absolute benefit and cost-effectiveness in those patients at higher risk.

A healthy lifestyle improves cardiovascular risk and reduces blood pressure in the prevention and treatment of hypertension. Hypertension can be prevented and treated and other cardiovascular risks can be improved through healthy eating, regular physical activity, low-risk alcohol consumption, reductions in dietary sodium, and, in some, stress reduction (**Table 5**).^{*} Few Canadians improve their lifestyles after being diagnosed with hypertension; however, even brief advice from health care professionals motivates patients in making lifestyle changes.³⁰ The Heart and Stroke Foundation's e-Health tool, "My Blood Pressure Action Plan" (www.heartandstroke.ca/BP), is designed to assess hypertensive patients' lifestyles, provide personalized e-mail support, and facilitate self-management through its

interactive portal that allows patients to track their blood pressure values and assess progress and achievements in their selected lifestyle areas of focus. Several patient handouts on hypertension can be obtained from www.hypertension.ca/tools. Patients can also sign up for regular updates and information about hypertension at www.myBPsite.ca.

Treat patients to target blood pressure values to achieve optimum cardiovascular risk reduction (<140/90 mm Hg; <130/80 mm Hg in people with diabetes or chronic kidney disease). The blood pressure targets recommended by CHEP reflect current best evidence to optimally reduce the incidence of cardiovascular disease (**Table 4**).^{*} Failure to achieve blood pressure targets results in higher cardiovascular risk, while substantially lowering blood pressure to below target values is of undetermined benefit or harm. People with known cardiovascular disease, diabetes, or chronic kidney disease are at higher cardiovascular risk, more often have uncontrolled blood pressures, and have the greatest reduction in cardiovascular events by achieving blood pressure target values.²⁷⁻²⁹

Monitor patients whose blood pressures are above target at least every 2 months. Follow-up at short intervals improves patient adherence and is required to increase the intensity of treatment.

Help patients adhere to therapy. Adherence to prescribed lifestyle changes and pharmacotherapy should be assessed at each visit. Health care professional interventions can prevent nonadherence and improve adherence in those who are having problems (**Box 3**).^{*}

Comments from the CHEP Executive

In 2010, CHEP will merge with the Canadian Hypertension Society and Blood Pressure Canada to form a single national hypertension organization dedicated to advancing health by the prevention and control of high blood pressure through research, advocacy, education, and knowledge development and translation. For Canadian health care professionals the transition will likely be seamless and go unnoticed. Canadian educational materials for health care professionals and patients will carry the CHEP logo and name, although the new organization will be called Hypertension Canada.

The CHEP team recognizes the difficulties health care professionals and hypertensive Canadians have in staying informed of the current best evidence in preventing and controlling high blood pressure. In 2010 CHEP will help make staying up to date much easier with the many websites available to stay informed.

This year will also be an important one for determining Canada's performance in the prevention and control of hypertension. Three big national surveys have been

prepared: On February 17, 2010, results of a Statistics Canada survey³¹ reported the national prevalence of hypertension and the awareness, management, and treatment and control rates. Based on surrogate data from other surveys, the national survey confirmed the 2006 Ontario survey results that suggested Canada is the world's leader in prevention and control of hypertension.³² Second, a detailed Statistics Canada–Public Health Agency of Canada survey of Canadians with hypertension has been completed and will provide an overview of their knowledge, attitudes, beliefs, and behaviour. This information will be used to develop new educational resources based on the documented educational needs of hypertensive Canadians. Finally, the first federal-provincial hypertension survey using linked provincial administrative databases has recently been released.³³ This ongoing surveillance mechanism tracked both the incidence and prevalence of hypertension diagnosed in people with and without diabetes and their mortality rates. The CHEP team continues to work with the Public Health Agency of Canada and the provincial governments to develop the methodology to add assessment of antihypertensive treatments, specific complications, and causes of death to this latter survey. The results of these surveys are critical to assessing the effect of programs on the prevention and control of hypertension and to redesigning or developing them further if necessary.

Reducing dietary sodium will be a priority for Hypertension Canada. Canadians with hypertension execute little change in lifestyles after hypertension

diagnoses. Although individual lifestyle advice can assist Canadians in making healthy choices, often our communities are structured to make healthy choices very difficult. Hypertension Canada strongly supports Health Canada's goals to reduce dietary sodium, and CHEP has aligned its dietary sodium recommendations with those of the Canadian government. The Health Canada Working Group on Dietary Sodium Reduction has a mandate to reduce sodium additives to food, to educate Canadians regarding the risks of high dietary sodium, and to ensure that any research required to reduce dietary sodium is conducted.³⁴

The CHEP Executive would like to thank the more than 100 health care professional volunteers who are working with CHEP to prevent and control hypertension (Table 6).^{*} The collaborative approach between volunteers from clinical practice, academia, and governments and support from primary care professional associations, the pharmaceutical health care industry, governments, charities, and scientific organizations has been associated with marked improvements in the management and outcomes of hypertension in Canada.

The **Canadian Hypertension Education Program** is overseen by a steering committee that includes representatives from the Canadian Council of Cardiovascular Nurses, the Canadian Pharmacy Association, the College of Family Physicians of Canada, the Public Health Agency of Canada, the Canadian Hypertension Society, Blood Pressure Canada, and the Heart and Stroke Foundation of Canada. The program is unique in having a specific implementation task force with subgroups of family physicians, nurses, pharmacists, and medical specialists to oversee translation of the recommendations into education material suited to their disciplines; the program also has a task force to evaluate whether the process is improving hypertension management in Canada.

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Competing interests

None declared

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Resources

Physicians can sign up at www.htnupdate.ca to be notified by e-mail when new resources are developed or updated for them or their patients. Current resources can be downloaded from www.hypertension.ca/tools. In 2010, an interactive Internet-based lecture series on clinically important hypertension topics will be launched, providing physicians the opportunity to learn from and interact with top national hypertension experts. Physicians will also be notified of opportunities to be trained as a hypertension community leader.

Patients can sign up at www.myBPsite.ca for a 2010 annual membership, with which they will receive e-mail notices of updated and new educational resources, a regular newsletter, discount coupons to assist with lifestyle change, lectures, and possibly in the future personalized advice from health care professionals.

Hypertension recommendations designed for public education have been developed in 2010. Bulk orders of 25 or more copies can be obtained by contacting hyperten@ucalgary.ca. Hypertension recommendations for patients with diabetes developed in 2009 are also available. These summaries are available electronically at www.hypertension.ca/bpc.

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