

2011 Canadian Hypertension Education Program recommendations

An annual update

On behalf of the Canadian Hypertension Education Program

Increased blood pressure (BP) remains one of the biggest health and economic issues facing the world.^{1,2} In 2010, a new Statistics Canada survey reported that Canada had the world's highest reported national rates of people who were aware of being diagnosed with hypertension and of people who were being treated for and had controlled hypertension.³ In fact, the Canadian rate of treatment and control had increased 5-fold since the previous national survey in 1985 to 1997.⁴ Further, additional surveillance data have linked reductions in the rates of premature death (from cardiovascular causes, stroke, heart failure, acute myocardial infarction, and total mortality) to increases in antihypertensive treatment in Canada.^{5,6} The Canadian success, based almost entirely on the clinical care provided by primary care health professionals, is emphasized by the Canadian treatment and control rate of 66%, while most developed countries have control rates of less than 30%.⁷ While the Canadian model for BP awareness, treatment, and control is an example to other countries of what is possible, there is still room for improvement, and the gains made so far must be sustained.

For the Canadian Hypertension Education Program (CHEP), 2011 marks the 12th consecutive year that the recommendations for the management of hypertension have been updated. The program was developed to help primary care providers and people with hypertension to better manage and prevent hypertension.⁸ This year marked another milestone in CHEP's history, as CHEP is now part of a unified national hypertension organization, Hypertension Canada. The Hypertension Canada leadership is aggressively moving forward to achieve a common vision—a vision that will bring about positive benefits for the millions of people in Canada who, on a daily basis, deal with the dangers and harmful effects of hypertension. Hypertension Canada is a newly integrated volunteer-based, not-for-profit organization that joins the resources and expertise of 3 already-strong organizations (Blood Pressure Canada, the Canadian Hypertension Society, and CHEP) representing more than 50 years of expertise in the field of hypertension. Through its members, Hypertension Canada can provide a single authoritative voice on hypertension, with more synergistic interactions across the pillars of education, scholarship, and research. Hypertension Canada's mission is to "advanc[e] health by the prevention and control of high

blood pressure through research, advocacy, education and knowledge development and translation."⁹ For more information, contact Judi Farrell, Executive Director, at judi.farrell@hypertension.ca or visit the Hypertension Canada website at www.hypertension.ca.

One of the main new thrusts of Hypertension Canada is to develop a Public Policy Committee to work with government and non-governmental organizations to promote healthy public policies, health services policies, and community capacity building to prevent and control hypertension. By aligning health care professionals, their organizations, and various levels of government to work on a common policy agenda, it is believed substantive progress can be made to further prevent and control hypertension. Therefore, the 2011 CHEP theme is a call to action to all Canadians, including clinicians and scientists, to advocate for policies to keep Canadians healthier through improved prevention and control of hypertension. This complements the recently adopted declaration by the Ministers of Health and of Health Promotion and Healthy Living, which made the promotion of health and the prevention of disease priorities for Canada.¹⁰

The 2010 CHEP theme to increase accessibility to hypertension resources and to increase the impact of CHEP will be sustained in 2011 as well. Health care professionals can enroll at www.hypertension.ca to get automated e-mail notices when new or updated hypertension resources are available for them or their patients. Current resources can also be downloaded from the site. A case-based, interactive lecture series on clinically important hypertension topics was launched in 2010. This program is training primary care physicians to become peer educators so that they can teach this material to their colleagues. It will also leverage the Internet to facilitate interaction with top national hypertension experts and provide timely feedback. The series of continuing medical education topics was drawn from national needs assessments combined with what is new in the annual CHEP recommendations. A series of podcast lectures, which can be watched or listened to, is coming soon. **Tables 1 and 2*** outline

*Tables 1 to 5, Boxes 1 and 2, 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.

current hypertension resources that are available for health care professionals and people with hypertension.

Hypertension Canada is also developing a hypertension association for Canadians with high BP. Encourage people with hypertension to sign up for free membership at www.myBPsite.ca. Members will receive by e-mail updated and new educational resources and a regular newsletter, and future plans include discount coupons to encourage a healthy lifestyle, lectures, and personalized professional health care advice. Members will be given opportunities to provide advice on the need for new hypertension resources and the need to revise current BP resources.

The following are areas of clinical hypertension management in Canada that are emphasized by CHEP in 2011.

Hypertension in people with diabetes

Most people with diabetes die of cardiovascular disease. Many specific complications in people with diabetes are attributable to elevated BP, and more intensive BP management has been shown to have large effects on total and cardiovascular mortality compared with less intensive management.^{11,12} In 2010, new clinical trial data became available to address systolic BP targets. While some have called for a less intensive systolic BP target based on these data, CHEP's critical analysis and consensus discussion resulted in the recommendation to maintain the BP target of less than 130/80 mm Hg.

Among studies that aimed to assess the effect of intensive BP control in patients with diabetes, the ACCORD-BP (Action to Control Cardiovascular Risk in Diabetes Blood Pressure Intervention Trial) was highly anticipated because it was expected to give information about systolic BP targets.¹³ The ACCORD trial was designed to examine the effect of high versus usual intensity of glucose lowering (N=10251 participants); to determine whether treating systolic BP to less than 120 mm Hg was superior to aiming for less than 140 mm Hg (N=4733); and to address the usefulness of fibrate-based lipid-lowering therapy in addition to statin-based lipid-lowering therapy (N=5518).¹³ While the main outcome of the ACCORD-BP study was that more intensive BP reduction was not superior to less intensive reduction, there were several issues relating to the ACCORD trial data that precluded accurate interpretation of the results. Study patients did better than predicted based on the event rates of older studies—there were 50% fewer cardiovascular events in the ACCORD trial than expected—which limits the trial's usefulness for assessing the clinical questions it was designed to address. Perhaps more important, the blood glucose-lowering and BP-lowering treatments used in the ACCORD trial appeared to interact in a fashion that affected the primary outcome of the trial. In this setting, the different treatments should be considered independently and

not combined. Unfortunately, only the details of the combined results were published, with little information presented on the treatments considered separately. There was a difference in the primary BP outcome in the 2 different glycemic-target arms. In the usual-glycemic-control arm (now the standard of care), there appeared to be a statistically significant 24% relative decrease in the ACCORD trial's primary composite outcome in the intensive-BP-treatment group compared with the standard-BP-treatment group. However, in the intensive-glucose-lowering arm of the study, there appeared to be no benefit to intensive BP control. Finally, the ACCORD trial did not directly include a comparison arm with a systolic BP target of less than 130 mm Hg, which is the threshold currently recommended, and so it does not directly inform the question of whether or not this threshold should be maintained. Given the lack of analysis provided and the lack of data to support a change in the target BP for people with diabetes, CHEP has left the recommended target BP at less than 130/80 mm Hg for 2011. Blood pressure targets will be revisited when more detailed analyses of the ACCORD trial become available.

Hypertension in stroke

Blood pressure frequently increases in the setting of acute stroke, and both very high and very low BP levels are associated with poor patient outcomes in the acute setting.^{14,15} There is little high-quality evidence to guide BP lowering in the setting of acute stroke, and some have expressed concern that both treatment and lack of treatment might cause harm. Before 2011 CHEP has not provided recommendations for managing hypertension in acute stroke; however, the following guidance is now offered by CHEP and the Canadian Stroke Network.¹⁶

People with ischemic stroke eligible for thrombolytic therapy. Very high BP (>185/110 mm Hg) should be treated concurrently in patients receiving thrombolytic therapy for acute ischemic stroke in order to reduce the risk of secondary intracranial hemorrhage.

People with ischemic stroke not eligible for thrombolytic therapy. Treatment of hypertension in the setting of acute ischemic stroke should not be routinely undertaken. Extreme BP elevation (eg, systolic BP >220 mm Hg or diastolic BP >120 mm Hg) can be treated to reduce the BP by approximately 15%, but not more than 25%, over the first 24 hours with gradual reduction thereafter. Avoid excessive lowering of BP, as this could exacerbate existing ischemia or induce ischemia, particularly in the setting of intracranial arterial occlusion or extracranial carotid or vertebral artery occlusion.

While CHEP has not specifically made recommendations for the management of BP in people with

intracerebral hemorrhage, a pilot study presented preliminary data that BP lowering was relatively safe and reduced the volume of the hemorrhage.¹⁷

Ongoing clinical trials will provide more evidence for the management of BP during acute stroke in the next few years.¹⁷ Controlling BP so it is consistently below 140/90 mm Hg more than 72 hours after the acute event is one of the most important interventions for preventing a recurrent stroke or transient ischemic attack.¹⁸

Cancer and angiotensin receptor blockers

The 2011 guidelines continue to recommend the use of angiotensin receptor blockers (ARBs) in appropriate clinical situations. Many antihypertensive drugs have been associated with cancer, only to have follow-up studies provide evidence that the drugs do not cause cancer.¹⁹ A post-hoc meta-analysis of 8 randomized controlled trials examining the association between ARBs and cancer was reviewed.²⁰ This analysis provides associative but not causal evidence for an increased risk of malignancy with ARB therapy. The CHEP task force noted that the US Food and Drug Administration (FDA) had not concluded that ARBs increased the risk of cancer, and they believed that the benefits of ARBs continued to outweigh their potential risks according to current data. Given the potential for cardiovascular events to result from the sudden discontinuation of antihypertensive therapy, the task force viewed the stance of the FDA as prudent and planned to revisit this issue when more data became available.

An ongoing safety review of this issue by the FDA is taking place.²¹ After critically reviewing Sipahi and colleagues' meta-analysis,²⁰ CHEP agreed with the FDA position that, pending completion of the FDA review, the indications for use of ARBs should remain unchanged.

Key issues in the management of patients with hypertension

Assess BP at all appropriate visits and encourage home measurement of BP. Systolic BP increases linearly with age. More than half of Canadians older than 60 years of age have hypertension, and it is estimated that 9 in 10 Canadians will develop hypertension within an average lifespan.²² All adults require ongoing assessment of BP; Canadians with high-normal BP in particular require annual BP assessment, as more than half will develop hypertension within 4 years.²³

Home measurement of BP can increase patient self-efficacy and is recommended for people with hypertension. Home BP readings are more closely associated with cardiovascular outcomes than readings taken in a health care professional's office are. They can be used to confirm the diagnosis of hypertension, improve BP control, reduce the need for medications in those who experience white-coat effect, identify those with white-coat and masked hypertension, and improve

medication adherence.²⁴ Patient instructions for purchasing and using home BP measurement devices can be found in **Box 1** and **Figure 1*** and at www.hypertension.ca and www.heartandstroke.ca/BP. A comprehensive instructional video on home BP measurement will be available soon at www.hypertension.ca, and patients can find additional resources to help them measure BP at www.MyBPsite.ca.

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. Consider using a risk assessment that incorporates cardiovascular or vascular age as a tool to aid patient adherence and understanding of individual cardiovascular risk (eg, www.myhealthcheckup.com and www.monbilansante.com).²⁵⁻²⁷ By far most Canadians with hypertension have other cardiovascular risks.²⁸ Comprehensive screening and management of other risk factors in addition to hypertension can double the reduction in cardiovascular risk, lower the BP target (**Table 3***), and change the types of antihypertensive medications recommended (**Table 4***). Many people with multiple cardiovascular risks or cardiovascular disease have uncontrolled BP levels, and those who smoke are less, rather than more, likely to be treated.²⁹⁻³¹ Pharmacotherapy has the greatest potential absolute benefit and cost-effectiveness in these higher-risk patients. Health care professionals and the public can access the SCORE Canada risk assessment resource at www.scorecanada.ca.

A healthy lifestyle reduces BP and improves cardiovascular risk in the prevention and treatment of hypertension. Healthy eating, regular physical activity, low-risk alcohol consumption, reductions in dietary sodium, and, in some, stress reduction (**Table 5***) can prevent or treat hypertension and other cardiovascular risks. Even though Canadians often report trying to make lifestyle changes, they might not succeed owing to, for example, the high sodium content of processed foods. It is important to note that brief advice from health care professionals helps patients to make lifestyle changes.³² The Heart and Stroke Foundation's eHealth tool, My Heart&Stroke 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, which allows people to track their BP levels, progress, and achievements in their selected lifestyle area of focus. Several patient handouts on hypertension can be obtained from www.hypertension.ca. Patients can also sign up for regular updates and information on hypertension at www.myBPsite.ca.

This latter website is expected to evolve into a public hypertension association to represent the interests of people with hypertension, providing an opportunity for people with hypertension to obtain resources and allow them to have a say in what resources are developed for them and to contribute to policies that affect their health. The 2011 CHEP theme of a call to action highlights the need for clinicians, scientists, and people with hypertension to advocate for healthy policy changes to help Canadians choose healthier lifestyles.

Treat patients to target BP levels (<140/90 mm Hg; <130/80 mm Hg in people with diabetes or chronic kidney disease). The CHEP BP target levels reflect current best evidence to optimally reduce cardiovascular disease (**Table 3***). Failure to achieve BP target levels results in higher cardiovascular risk; lowering BP substantially below a target is of undetermined benefit or harm. People with known cardiovascular disease, diabetes, or chronic kidney disease are at high cardiovascular risk and have the greatest reduction in cardiovascular events by achieving BP target values.²⁹⁻³¹

If BP is above target levels, reassess the patient 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 lifestyle change and pharmacotherapy should be assessed at each visit. Health care professional interventions can reduce nonadherence and improve adherence in those who are having problems (**Box 2***). Integrating pharmacists into the care of people with hypertension improves BP control.^{33,34}

Comments from the CHEP Executive


While Canada has become a world leader in the effort to control hypertension, many Canadians remain at increased risk because of elevated BP. This is especially true of those with increased BP within the normal range, as they experience approximately one-half of cardiovascular events. Population interventions to lower BP, such as reducing dietary sodium intake for all Canadians, could prevent hypertension in many, improve BP control, and reduce the cardiovascular risk of Canadians in both normal and hypertensive ranges.³⁵⁻³⁷ In 2010, the Federal and Provincial Governments of Canada announced they would collaborate to oversee a reduction in sodium additives to food, an education program for Canadians on how to reduce dietary sodium, and enhanced research to aid the effort to reduce dietary sodium. Additional collaborative government actions to improve diet and physical activity could substantially add to the sodium

reduction program and further prevent hypertension and cardiovascular disease, as well as a host of other chronic diseases including cancer. Further, more systematic approaches to the care of people with hypertension could result in more cost-effective, earlier, and complete identification of people with hypertension and result in further improvements in BP control.³⁸ This includes greater emphasis on health promotion and disease prevention in the primary health care setting. Part of the effort to control hypertension (and other cardiovascular risks) is ensuring communities have the capacity to identify and manage hypertension as cost effectively as possible.³⁹ Individual health care professionals and scientists and the organizations that represent them could have a much more important role in interacting with governments to ensure policies are developed and implemented to prevent and control hypertension and other health risks. Extensive reports have summarized the evidence for policy changes and outlined policies that would make Canadians much healthier.^{1,40-42} The CHEP Executive calls on Canadians, and specifically health care professionals and scientists, to work with governments to ensure that the healthy policies to lower BP, improve health services delivery, and expand community capacity are carefully considered and appropriately implemented to the benefit of Canadians. In 2011, Hypertension Canada activated a Public Policy Committee to facilitate this process.

Each year CHEP reviews the new evidence and integrates it into the previous evidence base to develop new recommendations when appropriate. The members of CHEP also consider the deliberations of international experts and other recommendations processes throughout the year. In 2010, the BP targets that had been recommended around the world were called into question. Early clinical trials were based on diastolic BP, and there is strong evidence supporting diastolic BP targets for both people with uncomplicated hypertension (eg, without other compelling indications) and people with diabetes. For systolic BP, the quality of evidence is less strong, in part because, ethically, recent trials were required to have active treatment comparisons because systolic BP is strongly correlated with diastolic BP. In many of the more recent trials, the entry criteria included a systolic BP of 140 mm Hg or higher, and in these trials small reductions in BP between different treatment regimens were associated with reductions in cardiovascular outcomes. While more carefully designed clinical trials would define the optimum systolic targets more precisely, there is little evidence on which to base alternative targets at this time.

At CHEP, we continue to recognize the difficulties health care professionals and hypertensive Canadians have in staying informed about the current recommendations for preventing and controlling high BP. At www.hypertension.ca you can enroll to be notified of all new

hypertension resources produced by CHEP for you or your patients. Your patients can also sign up at www.MyBPsite.ca to receive updated information developed to help them manage their BP.

Hypertension Canada would like to thank the more than 150 health care professional volunteers who are working with CHEP to prevent and control hypertension. The collaborative effort has been associated with marked improvements in the management and outcomes of hypertensive Canadians. 

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 educational 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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