

# 2005 Canadian Hypertension Education Program Recommendations

## What Are the New Messages?

As hypertension continues to be a significant public health problem, the Canadian Hypertension Education Program provides its sixth annual revised recommendations for the management of this condition. What's new this year and what is old, but still important?

On behalf of the Evidence-based Recommendations Task Force of the Canadian Hypertension Education Program

The Canadian Hypertension Education Program (CHEP) has updated its recommendations for the management of hypertension for the sixth consecutive year.

### **The goal of this effort has been twofold:**

1. To offer those in clinical practice a consensus view of how to manage the more than five million Canadians with hypertension (based on a critical analysis of the most recent clinical trial data in the field).
2. To use these updates as an opportunity to reiterate the key components of an optimal management program in hypertension.

In some ways, the most notable aspect of the 2005 process is the appreciation that despite the advances made in the management of hypertension, there remains a substantial gap at the “front end” of disease management, that is, in the detection and diagnosis of hypertension. Thus, for 2005 we have focused on the evidence supporting expedited assessment of both the hypertension-related risk of atherosclerotic disease, as well as a more global atherosclerotic risk assessment.

In addition, the 2005 Recommendations support the increasingly held belief that, in the choice of antihypertensive drugs, consideration of the effectiveness of blood pressure (BP) control supersedes consideration of pleiotropic effects for the five major antihypertensive classes.

### *What were the key elements of the 2005 recommendation process?*

The 2005 Canadian Hypertension Recommendations process incorporated all trials and epidemiologic observational studies published in the past 12 months felt to have relevance for the treatment of individuals with hypertension.

Additionally (and as in prior years), the impact of these studies was considered in the context of the cumulative evidence of the almost half-century of major clinical trials in hypertension (and in the context of the prior iterations of the evidence-based Canadian Hypertension Recommendations developed over the past 25 years). For 2005, these incorporated:

- the SHEAF Study<sup>1</sup>,
- the Ohasama Cohort,<sup>2,3</sup>
- the OvA Study,<sup>4</sup>
- Staessen *et al.*,<sup>5</sup>
- Thijs *et al.*,<sup>6</sup>
- VALUE,<sup>7</sup>
- ACTION,<sup>8</sup>
- INVEST<sup>9</sup> and
- VALIANT<sup>10</sup>, as well as a range of smaller studies and systematic reviews (and particularly the 2003 update from the BP Lowering Treatment Trialists Collaboration<sup>11</sup>).

For a full discussion of each of the trials and the meta-analyses considered in the 2005 process, you are referred to the unabridged version of the 2005 CHEP Recommendations for the Management of Hypertension ([www.hypertension.ca](http://www.hypertension.ca)).

### *What are the new key messages?*

#### *1. The diagnosis of hypertension should be expedited (Figure 1)*

Previous year's recommendations have outlined strategies to make the diagnosis of hypertension over up to six office visits and over a six-month period. Although minimizing the risk of misdiagnosing patients as hypertensive, this approach

- a) is not practical, given the current realities of health-care delivery in Canada and
- b) may expose hypertensive patients to undue risk of hypertensive complications.

This latter consideration was based on the cumulative impact of a number of major clinical trials, including CAPP,<sup>12</sup> ALLHAT<sup>13</sup> and, more recently, VALUE.<sup>7</sup>

In these studies, it was suggested early differences in secondary end points between treatment arms were due to differences in the early extent of BP control. Thus, in 2005, the Recommendations emphasize an updated algorithm for the expedited diagnosis of hypertension.

For patients with hypertensive urgencies/emergencies, a diagnosis of hypertension can be made at

an initial visit, where hypertension is comprehensively assessed.

For patients with one of the following:

- target organ damage,
- chronic kidney disease,
- diabetes mellitus or
- BP > 180/110 mmHg, a diagnosis of hypertension can be made at the second visit to assess BP.

For patients with BP between 160-179/100-109 mmHg (and not already diagnosed based on the criteria above), a diagnosis can be made at the third visit. It should be noted that in this diagnostic algorithm, preliminary visits where elevated BPs are noted (but in the absence of any specific assessment for the causes of hypertension or for hypertensive complications) would not be considered as an initial hypertension-related visit.

#### *2. Practitioners can use any of the three validated technologies to diagnose hypertension (Figure 1)*

Office-based diagnosis of hypertension has remained the gold standard for the diagnosis of hypertension, notwithstanding the increasing concerns regarding the variability in accuracy of measurements taken in the clinic setting.

However, it is now firmly established that out-of-office modalities for BP measurement are as, or more, effective in assessing the prognostic importance of BP elevations.<sup>2-6</sup>

To be effective, these technologies, including automatic ambulatory and home/self BP monitoring must be used by properly educated practitioners or patients and assumes the use of validated, properly calibrated equipment. When available (and properly used) these modalities are effective and can expedite the diagnosis of hypertension—especially for those patients with Level I hypertension (and without diabetes, chronic kidney disease or target organ damage)—that would otherwise require up to six visits and six months prior to a diagnosis being made.

#### **The Canadian Hypertension Education**

**Program** is a network of hypertension experts across Canada committed to the development of evidence-based recommendations for the management of hypertension, the dissemination of these recommendations and their application to individual patients groups.

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### *3. Reducing hypertension-related complications in the general population of patients with hypertension is more dependent on the extent of BP lowering achieved than on the choice of any specific first-line drug*

Studies considered in the 2005 process confirmed our previous recommendations that any one of the five drug classes shown to reduce cardiovascular outcomes in hypertensive patients is an appropriate choice for first-line monotherapy in hypertensive individuals. These drug classes include:

- the thiazide (and thiazide-like) diuretics,
- beta-adrenergic antagonists (in patients younger than 60),
- angiotensin-converting enzyme (ACE) inhibitors (in non-black patients),
- longer-acting dihydropyridine calcium channel blockers (CCBs) and
- angiotensin II receptor blockers (ARBs).

For 2005, the major change in the list of validated first-line therapies is the inclusion of longer-acting nondihydropyridine CCBs (verapamil and diltiazem). Broadening the first-line recommendations represented consideration of the totality of the evidence, including a recent systematic review<sup>14</sup> demonstrating the comparable effectiveness of both dihydropyridine and nondihydropyridine CCBs in reducing hypertension-related complications.

It needs to be reiterated that, as in previous years, the CHEP hypertension management recommendations are based solely on efficacy data. Considerations relating to individual patient/physician preferences and cost-effectiveness of different drug classes have not

been a component of this process. This approach reflects the evidence-based focus of these recommendations and the paucity of high-quality economic analyses addressing these issues.

For example, while it seems obvious to state thiazides are cheapest and, thus, should be preferred monotherapy, a full economic evaluation would need to factor in the costs of laboratory monitoring, as well as drug-related differences (and associated drug-related morbidity/mortality) in the rates of developing complication, such as diabetes mellitus or glucose intolerance. (The ability to develop recommendations on a pharmacoeconomic basis is further limited by the lack of any accepted evidence-based approach for the evaluation of this type of data in a rigorous and unbiased manner.)

### *What are the old, but still important messages?*

#### *1. The management plan for patients with hypertension must be based on their global cardiovascular risk*

The treatment of hypertension can only be seen as part of a global cardiovascular risk management. A patient's global cardiovascular risk (and recognition of risk factors beyond hypertension) has important implications in terms of the management of those other risk factors, as well as in the management of the actual hypertension (Tables 1 & 2).

### *Reducing hypertension-related complications in the general population of patients with hypertension depends more on the extent of BP lowering achieved than on the choice of any specific first-line drug class.*

For example, subsets of those patients at the highest risk (*i.e.*, hypertensive patients with diabetes mellitus or chronic kidney diseases) should

be treated to lower targets (< 130/80 mmHg) and their prescription should generally include either an ACE inhibitor or ARB.

BP control still remains a critical, but elusive goal in the management of the patient with hypertension. However, as important as it is, BP control must be viewed as only one component in the antiatherosclerotic strategy in the care of the patient with hypertension.

**Recommendations that continue to be critical in the management of the patient with hypertension include:**

- Initial consideration of lifestyle modifications (including dietary modifications, weight loss and exercise) as strategies that are not only effective in reducing BP, but are critical in a global cardiovascular protection prescription
- Consideration of both statins and acetylsalicylic acid (ASA) as part of a cardiovascular protection strategy for patients with hypertension
- ACE inhibitors for patients with established atherosclerotic disease
- Beta adrenergic antagonists, ACE inhibitors and aldosterone antagonists recommended for patients with hypertension and congestive heart failure
- ACE inhibitors or ARBs for patients with diabetes and kidney disease

*2. Lifestyle modifications are the cornerstone of both antihypertensive and antiatherosclerotic therapy*

Lifestyle modifications need to be emphasized. Lifestyle interventions are effective in the management of hypertension. Further, patients need to appreciate that lifestyle modification is the cornerstone of global management of many atherosclerotic risk factors.

For example, exercising (*i.e.*, walking) 30 to 60 minutes, four to seven days a week, will reduce the

possibility of becoming hypertensive and reduce BP in those already hypertensive<sup>15</sup> (as well as having beneficial effects on serum lipids).

*Combination therapies (both drug and lifestyle) are generally necessary to achieve target BP.*

Moderation of alcohol and keeping the waist circumference below 102 cm for men and 88 cm for women will also reduce the possibility of becoming hypertensive and developing the metabolic syndrome.

It is difficult to implement lifestyle change, given the factors in our society that discourage physical activity and healthy eating. Notwithstanding, even brief physician intervention increases the probability of a patient adhering to some lifestyle changes.

Multidisciplinary comprehensive approaches are most successful. However, it must be recognized that our environments largely determine lifestyles. Thus, health-care professional and volunteer organizations, local, provincial and federal governments, communities and the health-care and food industries all need to advocate for change in order to develop policies, create infrastructure and provide resources to support healthy lifestyles.

*3. Combinations of therapies (both drug and lifestyle) are generally necessary to achieve target BP*

Most patients require more than one antihypertensive drug to achieve recommended BP targets (Table 3). This is also true in the context of combining pharmacologic and lifestyle modification interventions and in the consideration of global strategies for atherosclerotic risk reduction.

*4. Focus on adherence*

Lastly, and perhaps most importantly, optimal management prescriptions are only of utility when there is patient buy-in. We must move our patients from


awareness through to adaptation to their new lifestyle and drug therapy.

Failure to achieve this adaptation is probably the most important factor leading to our ongoing challenge to improve BP control and reduce the epidemic of hypertension-related morbidity and mortality.

### *A take-home message*

Thus, and as in prior years, more important than what's new in the 2005 Recommendations is what's old, but still really important.

Hypertension remains a significant public health problem and many of the issues in the management of hypertension in 2004 remain in 2005. The tools to improve the control of hypertension and to reduce cardiovascular disease are in our hands.

The CHEP will continue to advocate for hypertension treatment and control, increase awareness of the importance of optimum hypertension management, develop tools to aid health-care professionals and evaluate the impact of our activities. We will continue to provide the most current, evidence-based recommendations to Canadian health-care practitioners. 

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Figure 1. Making the diagnosis

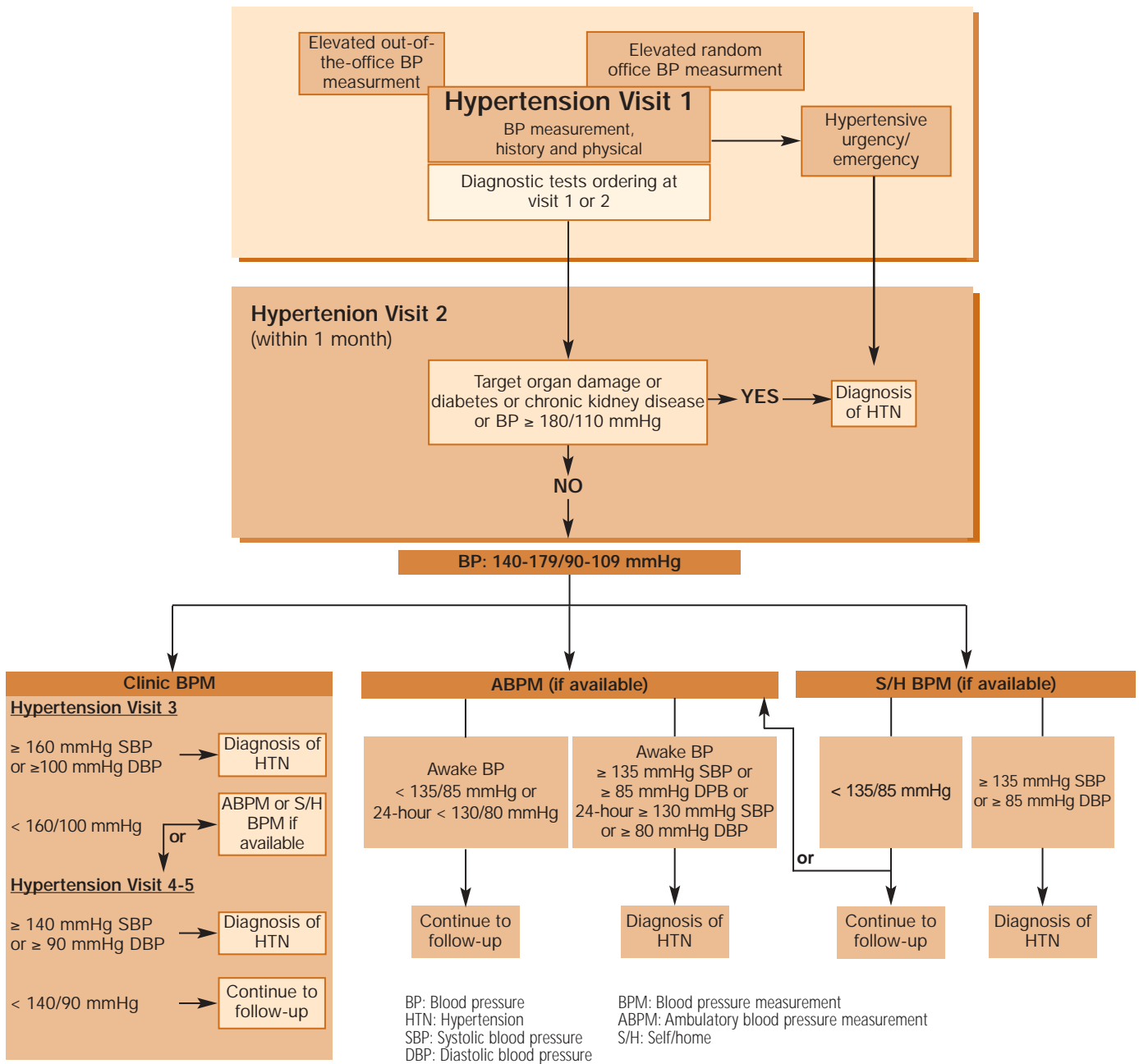


Table 1

Target values for BP

Condition	Target (SBP/DBP mmHg)
Diastolic $\pm$ systolic hypertension	$<$ 140/90
Isolated systolic hypertension	$<$ 140
Diabetes	$<$ 130/80
Renal disease	$<$ 130/80
Proteinuria $>$ 1 g/day	$<$ 125/75

SBP: Systolic blood pressure      DBP: Diastolic blood pressure



Table 2

Considerations in the individualization of antihypertensive therapy

	Initial therapy	Second-line therapy	Notes and/or cautions
<b>Hypertension without other compelling indications</b>	Thiazide diuretics, beta blockers, ACE inhibitors ARBs or long-acting CCBs (consider ASA & statins in selected patients)	Combination of first-line drugs (Table 3)	Alpha blockers are not recommended as initial therapy. Beta blockers are not recommended as initial therapy in those over 60. Hypokalemia should be avoided by using potassium-sparing agents in those who are prescribed diuretics as monotherapy. ACE inhibitors are not recommended in black patients.
<b>Isolated systolic hypertension without other compelling indications</b>	Thiazide diuretics, ARBs or long-acting dihydropyridine CCBs	Combination of first-line drugs	Hypokalemia should be avoided by using potassium-sparing agents in people who are prescribed diuretics.
<b>Diabetes mellitus with nephropathy</b>	ACE inhibitors or ARBs	Addition of thiazide diuretics, cardioselective beta blockers, long-acting CCBs or an ARB/ACE inhibitor combination	If the serum creatinine level is > 150 μmol/L, a loop diuretic should be used as a replacement for low-dose thiazide diuretic if volume control is required.
<b>Diabetes mellitus without nephropathy</b>	ACE inhibitors, ARBs or thiazide diuretics	Combination of first-line drugs or addition of cardioselective beta blockers and/or long-acting CCBs	
<b>Angina</b>	Beta blockers (strongly consider adding ACE inhibitors)	Long-acting CCBs	Avoid short-acting nifedipine
<b>Prior MI</b>	Beta blockers & ACE inhibitors	Combination of additional agents	
<b>Heart failure</b>	ACE inhibitor (ARBs if ACE inhibitor-intolerant), beta blockers & spironolactone	ARBs or hydralazine/isosorbide dinitrate (thiazide or loop diuretics as additive therapy)	Avoid nondihydropyridine CCBs (diltiazem, verapamil)
<b>Past cerebrovascular accident or TIA</b>	ACE inhibitor/diuretic combination		BP reduction reduces recurrent cerebrovascular events
<b>Renal disease</b>	ACE inhibitors (diuretics as additive therapy)	Combinations of additional agents	Avoid ACE inhibitors if bilateral renal artery stenosis
<b>LVH</b>	ACE inhibitors, ARBs dihydropyridine CCBs, diuretics (beta blockers for those under 55)		Avoid hydralazine and minoxidil
<b>Peripheral arterial disease</b>	Does not affect initial treatment recommendations	Does not affect initial treatment recommendations	Avoid beta blockers with severe disease
<b>Dyslipidemia</b>	Does not affect initial treatment recommendations	Does not affect initial treatment recommendations	
ACE: Angiotensin-converting enzyme ARB: Angiotensin receptor blocker	CCB: Calcium channel blocker ASA: Acetylsalicylic acid	MI: Myocardial infarction TIA: Transient ischemic attack	LVH: Left ventricular hypertrophy

Table 3

Useful antihypertensive drug combinations

Column 1

- Thiazide diuretics
- Long-acting CCB\*

Column 2

- Beta blocker\*
- ACE inhibitor
- ARB

For additive hypotensive effect in dual therapy, combine an agent from Column 1 with any in Column 2.

\*Caution should be exercised in combining a nondihydropyridine CCB and a beta blocker.

CCB: Calcium channel blocker  
ACE: Angiotensin-converting enzyme  
ARB: Angiotensin II receptor blocker