2005 Recommendations of the Canadian Hypertension Education Program: The 60-Second Version

Evidence-Based Recommendations Task Force of the Canadian Hypertension Education Program

This overview of the 2005 Canadian hypertension recommendations, developed by the Canadian Hypertension Education Program, is being submitted to a broad range of journals, including *CJHP*. The aim is to disseminate the recommendations to as many Canadian health care professionals as possible, to help ensure that patients receive consistent, up-to-date information and optimum care. The recommendations are updated yearly. The members of the Canadian Hypertension Education Program are listed at the end of this article.

INTRODUCTION

This year, 2005, marks the sixth consecutive year that the Canadian Hypertension Education Program has updated recommendations for the management of hypertension. The goal of this effort has been twofold: to offer those in clinical practice a consensus view of how to manage the more than 5 million Canadians with hypertension (based on a critical analysis of the most recent clinical trials data in the field) and 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 that have been 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 hypertension-related risk of atherosclerotic disease as well as a more "global" atherosclerotic risk assessment. In addition, the 2005 recommendations support the increasingly widely held belief that in the choice of antihypertensive drugs, consideration of the effectiveness of blood pressure control supersedes consideration of "pleiotropic" effects for the 5 major antihypertensive classes.

The new key messages identified in the 2005 recommendations are as follows:

- The diagnosis of hypertension should be expedited (especially in the setting of increased risk).
- Practitioners can use any of the 3 validated technologies (office, ambulatory, and self or home measurements) to diagnose hypertension.
- Reducing hypertension-related complications in the "general" population of patients with hypertension depends more on the extent of blood pressure lowering achieved than on the choice of any specific "first-line" drug class.

These new messages need to be incorporated into what remain as the "older but still really important" considerations for the management of the patient with hypertension:

- The management plan for patients with hypertension must be based on their global cardiovascular risk.
- Lifestyle modifications are the cornerstone of both antihypertensive and antiatherosclerotic therapy.
- Combinations of therapies (both drug and lifestyle) are generally necessary to achieve target blood pressures.
- Focus on adherence.

WHAT ARE THE NEW KEY MESSAGES IN THE 2005 RECOMMENDATIONS?

New Key Message 1: Diagnosis of Hypertension Should be Expedited

Previous years' recommendations have outlined strategies to make the diagnosis of hypertension over up to 6 office visits and over a 6-month period. Although minimizing the risk of misdiagnosing (or mislabelling) patients as hypertensive, this approach is not practical, given the current realities of health care delivery in Canada, and may expose hypertensive patients to undue risk of hypertensive complications. Thus, in 2005, the recommendations emphasize an updated algorithm for the expedited diagnosis of hypertension (Fig. 1). For patients with hypertensive urgencies or emergencies, a diagnosis of hypertension can be made at an initial visit where hypertension is comprehensively assessed. For patients with target organ damage, chronic kidney disease, diabetes mellitus, or blood pressure above 180/110 mm Hg, a diagnosis of hypertension can be made at the second visit for assessing blood pressure. For patients with blood pressure of 160–179/100–109 mm Hg (and not already diagnosed according to the criteria above), a diagnosis can be made at the third visit. It should be noted that in this diagnostic algorithm, a preliminary visit during which elevated blood pressure is noted but without any specific assessment for the causes of hypertension or for hypertensive complications would not be considered the "initial" hypertension-related visit.

New Key Message 2: Practitioners Can Use Any of the 3 Validated Technologies to Diagnose Hypertension

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 blood pressure measurement are as effective, or more effective, in assessing the prognostic importance of blood pressure elevation.[1-5] To be effective, these technologies, including automatic ambulatory blood pressure monitoring and home or self blood pressure monitoring, must be used by properly educated practitioners (for automatic ambulatory blood pressure monitoring) or patients (for self or home monitoring) and the use of validated, properly calibrated equipment is assumed. However, 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) who would otherwise require up to 6 visits and 6 months before a diagnosis is made. See Fig. 1.

New Key Message 3: Reducing Hypertension-Related Complications in the "General" Population of Patients with Hypertension is More Dependent on Extent of Blood Pressure Lowering than on Choice of any Specified "First-Line Drug"

Studies considered for the 2005 recommendations confirmed our previous recommendations that any 1 of the 5 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, ß-adrenergic antagonists (in patients younger than 60 years), angiotensin-converting enzyme (ACE) inhibitors (in non-black patients), longer-acting dihydropyridine calcium-channel blockers, and angiotensin II receptor blockers. For 2005 the major change in the list of "validated" first-line therapies is the inclusion of longer-acting non-dihydropyridine calcium-channel blockers (verapamil and diltiazem).

WHAT ARE THE "OLD BUT STILL IMPORTANT" MESSAGES IN THE 2005 RECOMMENDATIONS?

Management Plan for Patients with Hypertension Must be Based on Global Cardiovascular Risk

The treatment of hypertension can be seen as only part of global cardiovascular risk management. A patient's global cardiovascular risk (and recognition of risk factors beyond hypertension) has important implications both for the management of those other risk factors and the management of their hypertension — both in terms of their target blood pressures (Table 1) and in terms of specific drug therapies (Table 2). Recommendations that continue to be critical in the management of the patient with hypertension include the following:

- Initial consideration of lifestyle modifications (including dietary modifications, weight loss, exercise, and reduction of obesity) as strategies that are not only effective in reducing blood pressure but are also critical in a prescription for global cardiovascular protection.

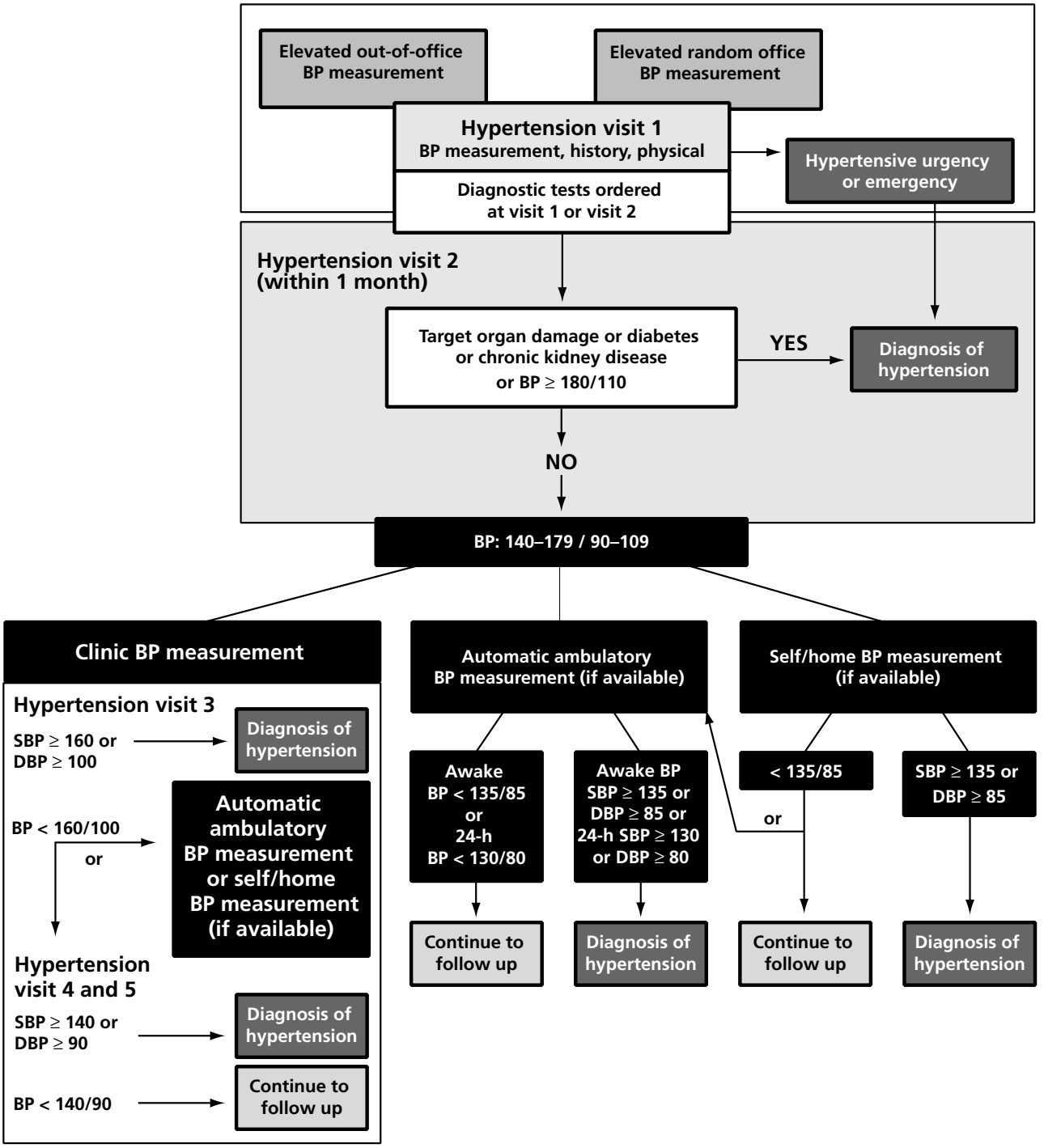

Figure 1. Expedited assessment and diagnosis of patients with hypertension: focus on validated technologies for blood pressure assessment. BP = blood pressure (all BP measurements in millimetres of mercury).

Table 1. Target Values for Blood Pressure

Condition	Blood Pressure Targets (mm Hg)
Diastolic ± systolic hypertension	SBP < 140, DBP < 90
Isolated systolic hypertension	SBP < 140
Diabetes mellitus	SBP < 130, DBP < 80
Renal disease	SBP < 130, DBP < 80
Proteinuria > 1 g/day	SBP < 125, DBP < 75

SBP = systolic blood pressure, DBP = diastolic blood pressure.

Table 2. Considerations in the Individualization of Antihypertensive Therapy

Condition	Initial Therapy	Second-Line Therapy	Notes and Cautions
Hypertension without other compelling indications	Thiazide diuretics, ß-blockers, ACE inhibitors, ARBs, or long-acting calcium-channel blockers (consider ASA and statins in selected patients)	Combinations of first-line drugs (see Table 3)	α-Blockers are not recommended as initial therapy. ß-Blockers are not recommended as initial therapy in those over 60 years of age. Hypokalemia should be avoided by using potassium-sparing agents in those who are receiving diuretics as monotherapy. ACE inhibitors are not recommended for black patients
Isolated systolic hypertension without other compelling indications	Thiazide diuretics, ARBs, or long-acting dihydropyridine calcium-channel blockers	Combinations of first-line drugs (see Table 3)	Hypokalemia should be avoided by using potassium-sparing agents in people who are receiving diuretics
Diabetes mellitus with nephropathy	ACE inhibitors or ARBs	Addition of thiazide diuretics, cardioselective ß-blockers, long-acting calcium-channel blockers, or a combination of ARB and ACE inhibitor	If serum creatinine level > 150 µmol/L, a loop diuretic should be used as a replacement for low-dose thiazide diuretics if volume control is required
Diabetes mellitus without nephropathy	ACE inhibitors, ARBs, or thiazide diuretics	Combination of first-line drugs or addition of cardioselective ß-blockers and/or long-acting calcium-channel blockers	
Angina	ß-Blockers (strongly consider adding ACE inhibitors)	Long-acting calcium-channel blockers	Avoid short-acting nifedipine
Prior myocardial infarction	ß-Blockers and ACE inhibitors	Combinations of additional agents	
Heart failure	ACE inhibitors (ARBs if intolerant of ACE inhibitors), ß-blockers, and spironolactone	ARBs or hydralazine/isosorbide dinitrate (thiazide or loop diuretics, as additive therapy)	Avoid non-dihydropyridine calcium-channel blockers (diltiazem, verapamil)
Past cerebrovascular accident or TIA	Combinations of ACE inhibitor and diuretic		Blood pressure reduction reduces recurrent cerebrovascular events
Renal disease	ACE inhibitors (diuretics as additive therapy)	Combinations of additional agents	Avoid ACE inhibitors if bilateral renal artery stenosis is present
Left ventricular hypertrophy	ACE inhibitors, ARBs, dihydropyridine calcium-channel blockers, diuretics (ß-blockers for patients < 55 years of age)		Avoid hydralazine and minoxidil
Peripheral arterial disease	Does not affect initial treatment recommendations	Does not affect initial treatment recommendations	Avoid ß-blockers for patients with severe disease
Dyslipidemia	Does not affect initial treatment recommendations	Does not affect initial treatment recommendations	

ACE = angiotensin-converting enzyme, ARB = angiotensin II receptor blocker, ASA = acetylsalicylic acid, TIA = transient ischemic accident.

- Consideration of both statins and acetylsalicylic acid as part of a cardiovascular protection strategy for patients with hypertension.
- Angiotensin-converting enzyme (ACE) inhibitors for patients with established atherosclerotic disease.
- ß-Adrenergic antagonists, ACE inhibitors, and aldosterone antagonists for patients with hypertension and congestive heart failure.
- ACE inhibitors or angiotensin II receptor blockers for patients with diabetes and kidney disease.

Lifestyle Modifications Are the Cornerstone of Antihypertensive and Antiatherosclerotic Therapy

Lifestyle modifications need to be emphasized (and re-emphasized). Lifestyle interventions are effective in the management of hypertension. Further, and as noted above, patients need to appreciate that lifestyle modification is the cornerstone of "global" management of many atherosclerotic risk factors. For example, exercising 30 to 60 min 4 to 7 days a week (e.g., walking) will reduce the possibility of becoming hypertensive and reduce blood pressure in those who are already hypertensive[6] (as well as having beneficial effects on serum lipids). 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 appreciated that it is difficult to implement lifestyle change, given the factors in our society that discourage physical activity and healthy eating. Nevertheless, even brief interventions by health care professionals increase the probability that a patient will adhere 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 must all advocate for change to develop policies, create infrastructure, and provide resources to support healthy lifestyles.

Table 3. Useful Antihypertensive Drug Combinations*

Column 1	Column 2
Thiazide	ß-Blocker†
Long-acting calcium-channel blocker†	ACE inhibitor
	ARB

ACE = angiotensin-converting enzyme, ARB = angiotensin II receptor blocker.
*For additive hypotensive effect in dual therapy, combine an agent from column 1 with any agent in column 2.
†Exercise caution in combining a non-dihydropyridine calcium-channel blocker and a ß-blocker.

Table 4. Recommendations to Improve Adherence with Antihypertensive Prescriptions: Multipronged Approach

Assess adherence with pharmacologic and nonpharmacologic therapy at every visit
Simplify medication regimens to once-daily dosing; use electronic medication compliance aids
Tailor pill-taking to fit patients' daily habits
Encourage greater patient responsibility and autonomy in monitoring blood pressure and adjusting prescriptions
Coordinate with work-site health care givers to improve monitoring of adherence with pharmacologic and lifestyle modification prescriptions
Educate patients and their families about their disease and treatment regimens

Combinations of Therapies (Drug and Lifestyle) Are Needed to Achieve Target Blood Pressure

Combination therapy needs to be a "given" in the management of the patient with hypertension. Most patients require more than one antihypertensive drug to achieve recommended blood pressure 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.

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 in improving blood pressure control and reducing the epidemic of hypertension-related morbidity and mortality (Table 4).

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