

Lifestyle changes to prevent and control hypertension: Do they work?

A summary of the Canadian consensus conference

Norman R.C. Campbell, MD; Ellen Burgess, MD; Gregory Taylor, BSc, MD; Elinor Wilson, PhD; Jean Cl  roux, PhD; J. George Fodor, MD, PhD; Lawrence Leiter, MD; J. David Spence, MD

Most deaths in Canada are caused by cardiovascular diseases associated with atherosclerosis.¹ Hypertension is one of the most common preventable risk factors for atherosclerosis. Worldwide, hypertension is the third leading risk factor contributing to death, surpassed only by malnutrition and smoking.² In Canada, 1 in 5 adults have hypertension (blood pressure greater than 140/90 mm Hg³). Diastolic blood pressure increases only until about age 60, but systolic blood pressure continues to increase with age. High systolic blood pressure is the major contributor to the 50% prevalence of hypertension in elderly Canadians,³ and its importance is similar to or greater than that of diastolic blood pressure as a predictor of adverse cardiovascular outcome.⁴⁻⁷

High blood pressure is mainly due to an interaction of environmental and genetic factors. Although the precise genetic factors influencing blood pressure are largely unknown, many of the environmental and social factors that cause high blood pressure are well known: obesity, excessive alcohol consumption, sedentary lifestyle, unhealthy diet and stress. Unfortunately, many Canadians are sedentary and have poor dietary habits.^{3,8} Lifestyle trends are similar in the United States, where recently there has been a decrease in blood pressure control, an increase in stroke rate and a levelling off of the previously declining rates of coronary artery disease.⁹

Because hypertension is common and treatable and because uncontrolled hypertension has serious consequences, preventive measures and control of blood pressure should be a high priority. Furthermore, given the high cost and potential complications of treating large numbers of patients with drugs, alternatives to drug therapy need to be considered for those with hypertension. Published in the supplement to this issue of *CMAJ* are the updated Canadian recommendations for lifestyle modifications to prevent and control hypertension.¹⁰ Along with the recommendations are extensive summaries of supporting clinical evidence graded according to study design. The recommendations, which are simple and straightforward, are also graded on the basis of the strength of the supporting evidence. Implementation will be difficult, but if the public, the health care system and health care professionals can rise to the challenge, the result will be a healthier population with less cardiovascular disease.

The new Canadian recommendations are summarized in Tables 1-3. The recommendations include weight reduction as a means of reducing blood pressure in those who are overweight. Maintenance of a healthy body weight is an important preventive measure. Physical activity not only helps to reduce weight but also reduces blood pressure in sedentary people. Excessive alcohol intake is an important yet frequently unrecognized cause of high blood pressure; moderation of intake or abstinence from alcohol is important to prevent and control hypertension (as well as many other medical and social problems). Stress reduction through individualized cognitive behaviour modification is effective in reducing blood pressure in selected patients with hypertension, and moderation in sodium intake is effective in reducing blood pressure in hypertensive patients older than 44 years. Supplementation of the diet with calcium, potassium or magnesium is not effective in reducing blood pressure when people have adequate dietary intake.

The following case scenario outlines some of the difficulties, opportunities and approaches in implementing these recommendations.



Education

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Dr. Campbell is with the Divisions of General Internal Medicine, Geriatrics and Nephrology, and the Departments of Medicine and of Pharmacology and Therapeutics, University of Calgary, Calgary, Alta.; Dr. Burgess is with the Division of Nephrology, Department of Medicine, University of Calgary, Calgary, Alta.; Dr. Taylor is with the Bureau of Cardio-Respiratory Diseases and Diabetes, Laboratory Centre for Disease Control, Health Canada, Ottawa, Ont.; Dr. Wilson is with the Heart and Stroke Foundation of Canada, Ottawa, Ont.; Dr. Cl  roux is with the Hypertension Research Unit, Centre de recherche du Centre hospitalier de l'Universit   de Laval, and the Department of Medicine, Universit   Laval, Sainte-Foy, Que.; Dr. Fodor is with the University of Ottawa Heart Institute, Ottawa, Ont.; Dr. Leiter is with the Departments of Medicine and Nutritional Sciences, University of Toronto, Toronto, Ont.; and Dr. Spence is with the Departments of Neurosciences, of Internal Medicine and of Pharmacology and Toxicology, University of Western Ontario, London, Ont.

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Mr. G is a 55-year-old patient with hypertension whose wife has booked an appointment to have his blood pressure checked. He was last seen more than a year ago and has not refilled his antihypertensive medications in the last 9 months. When informed about his risk for heart disease and stroke and asked if he would like help controlling his blood pressure, he states that hypertension is the least of his worries, that he feels fine and that he is much more concerned about keeping his job.

Mr. G is clearly resistant to any advice regarding his hypertension and risk for cardiovascular problems. The physician should ask him to consider the positive and negative aspects of his current lifestyle and the barriers he perceives to changing his habits; this insight could be useful in preparing him for change. Written and verbal information may also be helpful when Mr. G begins to consider changing his lifestyle.

The set-up of a physician's office can inhibit or enhance the counselling process. Pommerenke and Weed¹¹ concluded that reminders such as flow charts, chart stickers, checklists and computerized notices can dramatically increase a physician's compliance with recommendations for preventive medicine. A recent meta-analysis of controlled trials reported that office systems had an impact on physician practices and patient outcome.¹² The lack of logistic support has often been cited by physicians as a barrier to the provision of preventive services.¹³⁻¹⁵

Four weeks after his appointment, Mr. G unexpectedly calls and schedules another blood pressure check. A close friend had a heart attack 2 weeks previously, and Mr. G has become concerned about his health.

Illness in a friend or relative or a personal complication can create an opportunity to change lifestyle. The physician should assess Mr. G's lifestyle for factors that could contribute to hypertension (Table 1) and cardiovascular disease. Mr. G currently smokes one pack of cigarettes per day. He enjoys drinking with his friends on weekends but is evasive about the quantity. He does say he has been trying

Table 1: Recommendations to assess lifestyle and dietary habits

- Determine the weight, height and body mass index of patients with hypertension
- Determine the alcohol consumption of all adult patients
- Determine the salt consumption of patients with hypertension
- Consider the contribution of stress in patients with hypertension

Table 2: Recommendations for the prevention of hypertension

- All adults should attain and maintain a healthy body mass index
- Alcohol consumption should be in accordance with Canadian low-risk drinking guidelines (i.e., healthy adults should limit alcohol consumption to 2 drinks or fewer per day, and consumption should not exceed 14 standard drinks per week for men and 9 standard drinks per week for women)
- All adults should be encouraged to participate in regular, moderately intense (40% to 60% of maximum oxygen consumption) physical activity for 50 to 60 minutes, 3 or 4 times per week

to cut down his drinking for the past 2 or 3 years. He works selling tickets for a hockey team and has no active hobbies. His physical activity is minimal. He eats "fast food" 5 or 6 times a week and adds salt to his food before tasting it. He indicates that his wife is concerned about his health. He is obese (weight 98 kg, height 1.7 m, body mass index 33.9), and his blood pressure averages 166/96 mm Hg.

Mr. G should be made aware of the risks of hypertension and the benefits of lowering blood pressure. He also needs advice on lifestyle changes and the importance of adhering to the agreed-upon treatment regimen. Table 3 outlines the lifestyle changes that can lower blood pressure in patients with hypertension. Mr. G could benefit by following most of these recommendations; such changes can replace medications in some patients. Treatment should be individualized. The physician should help Mr. G determine what changes in his lifestyle he is willing to make and when. The physician should also find out whether there are local resources available for individual or group lifestyle counselling. Mr. G should be made aware of the importance of monitoring lifestyle changes himself and of keeping referral and follow-up appointments. For 3 to 6 months the physician should regularly monitor Mr. G's lifestyle changes and re-assess the need for drug treatment.

Cigarette smoking is also a powerful risk factor for cardiovascular disease, and avoidance of tobacco in any form is important. People who smoke may not receive the full degree of protection against cardiovascular disease from anti-hypertensive therapy.¹⁶ Smoking cessation aids that contain nicotine are safer than smoking, and therapeutic doses have not been associated with long-term increases in blood pressure; therefore they may be used with appropriate counselling and behaviour interventions. Dyslipidemia and glucose intolerance are also strong risk factors for cardiovascular disease and are more common in people with high blood pressure. It is important for patients with hypertension to be

Table 3: Recommendations for lifestyle modification to lower blood pressure in people with hypertension

- Weight loss should be encouraged for all overweight patients; even moderate weight loss (i.e., 4.5 kg in obese patients with hypertension) can improve blood pressure
- Alcohol consumption should be consistent with Canadian low-risk drinking guidelines (i.e., healthy adults should limit alcohol consumption to 2 drinks or fewer per day, and consumption should not exceed 14 standard drinks per week for men and 9 standard drinks per week for women)
- Patients should be encouraged to participate in regular, moderately intense (40% to 60% of maximum oxygen consumption) physical activity for 50 to 60 minutes, 3 or 4 times per week
- Patients should be advised to choose foods low in salt, to avoid salty foods and to minimize the use of salt at the table and during cooking
- In patients with hypertension where stress appears to be a significant factor, advise individualized cognitive behavioural interventions
- Patients should be encouraged to eat a healthy diet consistent with Canada's *Guide to Healthy Eating* to ensure sufficient potassium, calcium and magnesium intake



specifically assessed for dyslipidemia and glucose intolerance. Patients with these conditions require more aggressive blood pressure control and specific advice and therapy.

When Mr. G returns for his third blood pressure check, his blood pressure and weight are unchanged. He still drinks and smokes but claims to have reduced alcohol and food intake and to have increased physical activity.

At this appointment, Mr. G should be encouraged, and the difficulty and benefits of change should be discussed with him. Mr. G needs help to identify personal barriers and solutions; self-monitoring of blood pressure, alcohol consumption, weight, diet and activity is one option. It may help Mr. G to learn that several attempts are usually necessary before change is achieved. The physician should reward small improvements. A sustainable weight loss of 0.5 kg per month will result in a loss of 12 kg after 2 years. Rapid, dramatic weight loss is rarely sustainable.

Unfortunately, 2 months after his third appointment Mr. G has still not made any progress. His wife asks why he isn't receiving magnesium supplements, as recommended in a health magazine she read.

Data do not support the use of magnesium supplements to reduce blood pressure,¹⁷ and such supplements are not recommended (Table 3). The physician should explain to Mrs. G that a healthy diet contains adequate minerals and vitamins and that research has shown that magnesium supplements do not reduce blood pressure.

After 3 years Mr. G's blood pressure is poorly controlled, and he has been given a prescription for drug therapy; he is 3.5 kg heavier, still smokes and remains sedentary.

The frustrations of advocating lifestyle changes are obvious to all in clinical practice. Community resources are rarely available or convenient, counselling takes considerable time, and many patients do not adhere to the treatment. Lifestyle change needs to be ongoing, even if patients are receiving medication, to address overall cardiovascular risk and reduce the number and dose of medications. Unfortunately, medications do not seem to be the only answer. Despite the proven efficacy of antihypertensive drugs, adherence rates are low in clinical practice.¹⁸ Even with extensive publicity regarding the importance of blood pressure control and the benefits of drug therapy, only 16% of people with hypertension in Canada have the condition under control.³

It is important to keep advocating lifestyle changes. Consistent long-term efforts are required by health care professionals to change the environment to make it easier for patients to choose healthy living habits. Part of the effort is to advocate healthy lifestyles to patients. Health care professionals are also role models for patients and should examine the appropriateness of their own lifestyles. Physicians and other health care professionals could also be strong advo-

cates for community resources to assist patients with lifestyle changes. Patients interested in healthy lifestyles produce a consumer demand to which government and the free market respond. The recommendations summarize the evidence that lifestyle changes are beneficial; however, it's up to the health care profession, our patients and the public to ensure that the recommendations are put into action.

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Reprint requests to: Heart and Stroke Foundation of Canada, 1402-222 Queen St., Ottawa ON K1P 5V9; fax 613 569-3278