Research

Hypertension management in Canada: good news, but important challenges remain

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Three research articles in this issue of *CMAJ* bring evidence of marked improvements in the diagnosis and treatment of hypertension in Ontario, Canada's most populous province.[1–3] The findings will have a major impact on health care professionals interested in cardiovascular disease, public health and hypertension worldwide. Those in the Canadian health care system, particularly the primary care system, can be proud to be setting benchmarks for the management of this leading cause of death. Nevertheless, substantial challenges remain.

The prevalence of hypertension continues to increase globally. In the Framingham heart study, the lifetime risk for hypertension among middle-aged normotensive adults was estimated to be 90%.[4] Typically, most cases of hypertension either are not diagnosed or go untreated. The condition is a key contributor to the development of cardiovascular and cerebrovascular disease, with nearly two-thirds of all cases of stroke and one-half of all cases of ischemic heart disease being directly attributable to hypertension.[5] This gap in prevention and management represents a major public health failure worldwide.[5,6]

In the first 2 research articles in this issue, Tu and colleagues report on trends in the prevalence and incidence of hypertension and associated mortality among adults aged 20 years and older in the province of Ontario using linked administrative data.[1,2] They found that the age- and sex-adjusted prevalence of hypertension increased by 60.0% (from 153.1 per 1000 in 1995 to 244.8 per 1000 in 2005) and that the age- and sex-adjusted incidence increased by 25.7% (from 25.5 per 1000 in 1997 to 32.1 per 1000 in 2004).[1] Because the increase in prevalence markedly exceeded predictions, the authors examined whether it was associated with a large increase in cardiovascular disease burden. During the same period, they found a 15.5% reduction in the age- and sex-adjusted mortality among patients with hypertension.[2] This finding suggests that the increased prevalence of hypertension was due to both an increase in incidence and a decline in mortality.

In the third article, Leenen and colleagues[3] present their findings from the Ontario Survey on Prevalence and Control of Hypertension (ON-BP), which examined the prevalence, treatment and control of hypertension among 2551 adults in Ontario. They found that the prevalence of hypertension was 21% among the respondents and that 52% of those aged 60–79 years had hypertension. Two-thirds of the people with hypertension were receiving antihypertensive treatment and had blood pressure control. Compared with data from previous Canadian studies, the authors found that the mean systolic and diastolic blood pressures were substantially lower, particularly among those aged 60 years and older.

One of the most important findings from the ON-BP study is the remarkable improvement in hypertension management. The reported hypertension awareness rate of 87%, treatment rate of 82%, and treatment and control rate of 66% are by far the highest from any population-based study. In comparison, the second highest rates reported to date were from a province in Cuba, where 78% of the respondents who had hypertension stated that they were aware of their condition, 60% received treatment, and 40% received treatment and had blood pressure control.[7] The results reported by Leenen and colleagues indicate a vast change compared with the findings of the 1985–1992 Canadian Heart Health Survey, which reported a treatment and control rate of 13%.[8] The latest American survey found a treatment and control rate of 37%, and comparable studies from Europe indicated that less than 25% of people with hypertension receive adequate treatment.[9,10]

The ON-BP study also provides important insights into ethnic background and hypertension. South Asian and female black Canadians had a disproportionately high prevalence of hypertension. This indicates the need for tailored interventions to prevent hypertension at the community and individual levels. The new Canadian initiative to lower the amount of sodium in prepared foods may be important to reduce hypertension prevalence in these populations.[11] It

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is reassuring that the ON-BP study found similar levels of treatment and control in different ethnic groups, an issue the American health care system has not yet successfully dealt with.[9]

The high and increasing prevalence of hypertension reported by Tu and colleagues[1] is in contrast with the lower prevalence reported by Leenen and colleagues.[3] One of the strengths of the study by Tu and colleagues is that the authors used administrative data to identify all adults with physician-diagnosed hypertension in Ontario and follow them over time. However, some caveats are required for interpreting their results. In clinical practice, initial blood pressure assessments often overestimate blood pressure and may lead to billings for hypertension but no diagnosis of hypertension.[12,13] Administrative data, therefore, may overestimate the prevalence of hypertension because of Ontario's high rate of awareness. Furthermore, the sharp increase in the incidence of hypertension after 1999 reported by Tu and colleagues coincides with the introduction of the Canadian Hypertension Education Program and probably represents an increase in the detection of hypertension rather than a true increase in its incidence.[14] It is interesting that Tu and colleagues report a reduction in mortality among people with hypertension at about the same time as the rapid increase in incidence.[2] This occurrence could be because more cases of hypertension in lower-risk patients were diagnosed or because of improvements in the management of hypertension, as documented by Leenen and colleagues, or both.

The study by Leenen and colleagues also requires some caveats. The technique by which blood pressure was assessed is associated with less "white coat" hypertension than manual methods used in previous surveys, which may explain in part why the prevalence of hypertension was lower in their study than in the previous studies.[15] The lower rate of participation in the study by Leenen and colleagues compared with earlier surveys raises concerns that the respondents may not be representative of all Ontarians and that populations with high prevalence rates of hypertension may not have been fully represented. To verify and assess the generalizability of the results of the ON-BP study, we will have to wait for the release of the Canadian Health Measures Survey in 2010.

Accumulating evidence shows marked improvements in the diagnosis and treatment of hypertension in Canada since the start of the Canadian Hypertension Education Program.[14,16,17] This extensive knowledge-translation program provides guidance based on up-to-date evidence for hypertension management. It is tailored to primary care health professionals and is coupled with an expanding outcomes evaluation program.[18–20] More recently, an expanding public education program has been established by Blood Pressure Canada. The improvement in hypertension care and the usefulness of effective education programs for health care professionals such as the Canadian Hypertension Education Program could serve as an example for other countries, both developed and developing, and could be generalized to improving the management of other risk factors.

Although the evidence in this issue indicates that the diagnosis and management of hypertension have improved, the ON-BP survey clearly indicates that more needs to be done. Leenen and colleagues found that 1 in 3 adults with hypertension did not have blood pressure control. They also found that two-thirds of adults at high risk for cardiovascular disease because of comorbid diabetes and hypertension did not have blood pressure control and that over one-quarter had received no treatment. Of note, more intensive treatment of hypertension in patients with diabetes can actually save the health care system money as well as preventing death and disability.[21] Furthermore, control of systolic blood pressure was recently reported to have been achieved in only 58% of patients with known cardiovascular disease and who were at high risk for further events.[22] Perhaps one of the most important challenges is the prevention of hypertension. Although hypertension is preventable, it is estimated that the the condition will develop in 90% of Canadians.[4] These are important challenges, and there is much that can be done to improve health through prevention and control of hypertension.

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