

# Stroke Prevention and Sodium Restriction

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Stroke prevention is extremely cost-effective. The Ontario Task Force for the Coordinated Stroke Strategy for Ontario received from Dr. Muhammad Mamdani of the Institute for Clinical Evaluative Sciences the estimate that stroke prevention is approximately ten times more cost-effective than treating acute stroke with tPA.<sup>1</sup> Hackam and Spence<sup>2</sup> have calculated that in the highest-risk patients it would be possible to reduce the risk of stroke by more than 90% by a combination of interventions (including blood pressure control, smoking cessation, diet, treatment of diabetes, lipid-lowering therapy, and for patients in whom it is indicated, anticoagulation for atrial fibrillation or carotid endarterectomy). Dr Mukul Sharma (personal communication) has shown that stroke prevention is a dominant strategy in health economic terms; i.e. that it improves outcomes while reducing net costs. Effective control of hypertension has the potential to reduce stroke by half.<sup>3,4</sup> Because hypertension is so prevalent, it accounts for the greatest population attributable risk for stroke, and thus represents the greatest opportunity to reduce stroke.

On Oct 25, 2006, 17 major Canadian health care, scientific and non-governmental organizations including the Canadian Stroke Network announced an endorsed policy statement calling on the government and the food sector to reduce sodium additives to food. The call to action was closely followed by the Government of Canada announcing the formation of an intersectoral work group to oversee the reduction in sodium additives to food. Neurologists and neuroscientists may wonder about the reasons for a focus on dietary sodium and what the benefits are for Canadians.

Many health care professionals are aware that high dietary intake of sodium leads to increased blood pressure and that some patients are more susceptible.<sup>5,6</sup> However, some may be confused by literature sponsored by the food processors indicating that the changes in blood pressure are small, that only certain types of people are affected, and that interventions to reduce dietary sodium are relatively ineffective.<sup>7</sup> This commentary is to explain the importance of reducing dietary sodium for the health of Canadians and to explain why health care professionals should support this effort.

For an adult, Health Canada recommends that sodium intake of 1200-1500 mg per day is 'adequate intake' and that 2300 mg per day is the 'tolerable upper limit' for health.<sup>6</sup> Currently Canadians consume about 3500 mg of sodium a day. An 1800 mg /day reduction in dietary sodium reduces blood pressure in hypertensive patients by about 5/3 mmHg, with more aggressive dietary sodium reduction resulting in even greater blood pressure lowering.<sup>5</sup> A reduction of 1800 mg sodium per day is estimated

to reduce the prevalence of hypertension in Canada by 30% and to prevent 1 in 7 stroke deaths, 1 in 11 coronary deaths, and 1 in 14 deaths from any cause in hypertensive patients.<sup>8,9</sup> Further, this reduction in dietary sodium would result in a reduction in blood pressure in normotensive Canadians of 2/1 mmHg with an estimated reduction of 1 in 17 stroke deaths, 1 in 25 coronary deaths, and 1 in 33 deaths.<sup>9</sup>

Approximately 80% of dietary sodium is added to food in processing, with less than 10% being present in unprocessed food.<sup>6</sup> As most Canadians eat a substantial amount of food that is processed or bought at restaurants, most are not aware they are eating unhealthy amounts of sodium.<sup>10,11</sup> By itself, advice to patients to reduce sodium intake is relatively ineffective<sup>12</sup> because sodium sources are both ubiquitous and not apparent to the consumer. Therefore the effort to reduce dietary sodium intake will be most effective if the amount of sodium added during the processing of food can be reduced. It is important that the public understand the need to select lower sodium foods. Health care professionals should provide brief interventions and ensure they have literature such as Canada's Food Guide ([www.hc-sc.gc.ca/fn-an/foodguide-aliment/index\\_e.html](http://www.hc-sc.gc.ca/fn-an/foodguide-aliment/index_e.html)) to educate patients on reduced dietary sodium as part of a healthy lifestyle. Gradual reductions in sodium (10%) over six weeks or more are generally not noticed by patients. More rapid reductions in dietary sodium may be unpalatable because of an acquired taste. Key educational points for patients are provided in the table; more details can be found at [www.hypertension.ca/bpc](http://www.hypertension.ca/bpc).

By using a multifaceted approach of reducing sodium additives to food and educating the population, Finland reduced dietary sodium intake by 40%.<sup>13</sup> The Canadian initiative expects to reduce dietary sodium intake to less than the upper limit by 2020.

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**Table: Advice for patients on how to reduce dietary sodium\***

Eat more fresh foods, especially fruit and vegetables

Purchase processed foods with low salt claims on labels, or brands with the lowest percentage of daily sodium intake on the food label

Purchase less heavily salted foods (avoid pickled foods, olives, salted crackers or snacks, processed meats, etc).

Rinse canned foods with water before eating.

Use less salt in home cooking, and no added salt at the table

\* with permission of Blood Pressure Canada

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