Pass the Salt? 
Sodium Recommendations

On behalf of the Canadian Hypertension Education Program (CHEP), Dr. Campbell details the importance of a reduction in our sodium consumption in order to help protect against the associated risks of hypertension.

Norm Campbell, MD, FRCPC, on behalf of CHEP

Hypertension affects about one-quarter of Canadian adults. The prevalence is expected to rise due to increases in average age and obesity in the population. Already, > 90% of Canadians living an average lifespan will develop hypertension. Treatment with drugs reduces the risk of hypertension but is costly and can have side-effects. Therefore, lifestyle modifications to prevent and manage hypertension are attractive.

Each year the Canadian Hypertension Education Program (CHEP) has reviewed literature and produced management recommendations on lifestyle modifications to prevent and control hypertension. This is a summary of the recommendations on dietary sodium.

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CHEP recommendations

In the past, for the prevention of hypertension, a recommendation to reduce sodium consumption to < 100 mmol q.d. (for sodium and salt equivalents, please see Table 1) was given to individuals at risk and considered to be salt sensitive, such as those individuals:

• of African descent,
• > 45 years of age,
• with chronic kidney disease, or
• with diabetes. Since the recommendations were not inclusive of the full population, implementation required identification and counselling of individuals, an approach which had limited effectiveness. In 2007, the major change was to make a general recommendation for the reduction in dietary sodium to < 100 mmol q.d. This facilitates population approaches, such as reducing the sodium content of food.

The recommendations for 2007 were based on increased evidence on the impact of dietary sodium on BP and by extensive discussions within CHEP regarding the interpretation of past evidence relating to sodium and to the prevention of hypertension. In 2006, the updated Cochrane meta-analysis on the effects of sodium additives on BP showed the following results in hypertensive patients:

• A reduction in dietary sodium of 78 mmol q.d. resulted in reductions in BP of 5.1/2.7 mmHg
• A reduction in dietary sodium of 100 mmol q.d. resulted in a BP reduction of 7.2/3.8 mmHg.

In those with normal BP, it was also found that:
• A reduction in dietary sodium of 74 mmol q.d. produced a reduction in BP of 2/1 mmHg.
• If the dietary sodium was reduced by 100 mmol q.d. a reduction in BP of 3.6/1.7 mmHg was noted.

A meta-analysis by the National Institute for Clinical Evaluation published in 2006, showed similar reductions in BP in hypertensive patients (prevention of hypertension was not considered). Also in 2006, a reduction in dietary sodium by 80 mmol q.d. was shown to result in a decrease in the prevalence of hypertension by 9% to 17%. It was noted that the analysis underestimated the reduction in prevalence of hypertension as it did not use the new estimates for reduction in BP associated with a reduction in dietary sodium. It was also observed that the reduction in BP in those who were normotensive, while appearing modest, could result in a substantial reduction in cardiovascular (CV) disease.

In 2006, the first controlled intervention trial on sodium purported to assess patient morbidity and mortality showed that replacing 50% of dietary sodium additives with potassium additives reduced CV death rates by 41% and was associated with a greater life expectancy. In particular, there was less congestive heart failure and stroke in the intervention group. The trial had significant methodological issues and requires interpretation with caution.

Also in 2006, an observational cohort study reported that lower dietary sodium was associated with higher CV disease. The cohort study had substantive design deficiencies and came from the same group that had produced similar evidence on two previous occasions. It was noted that one of the previous analyses by this group had been refuted by a reanalysis and that there were a number of observational studies from many different investigators around the world that had the opposite conclusions.

Based on an assessment of the new evidence, the recommendations for the prevention of hypertension were altered to recommend that dietary sodium be reduced to < 100 mmol q.d. The recommendation for the management of hypertension was not changed (sodium intake between 60 mmol and 100 mmol q.d.). While seemingly minor, the change in the recommendation for prevention of hypertension opens the door to population approaches and, in particular, reductions in additives of sodium to the food source.

The new CHEP recommendation is consistent with recommendations from scientific and health groups such as the World Health Organization, the American Heart Association and the National Academy of Sciences. These organizations do not believe
the data is controversial and have clear, consistent recommendations to reduce dietary sodium. It was noted that the recommendation is not consistent with the advice from institutes sponsored by salt manufacturers and food processors (i.e., the Salt Institute, and the International Life Sciences Institute) nor their scientific advisors

What can healthcare practitioners do?

Canadian adults require counselling to select foods that do not have sodium additives (e.g., fresh fruits and vegetables) and to read food labels on processed foods to select those with the least sodium additives. The soon-to-be released 2007 version of Canada’s Guide to Healthy Eating will contain more details on how to avoid sodium in the diet. In addition, Canadians need to be counselled to avoid foods that are high in dietary sodium additives. A more comprehensive article outlining advice to patients will be published in a later issue of Perspectives in Cardiology and patient information can be found on the Canadian Hypertension Society website (www.hypertension.ca) and the Dietitians of Canada website (www.dietitians.ca).

Table 1

<table>
<thead>
<tr>
<th>Sodium (mg)</th>
<th>Sodium (mmol)</th>
<th>Salt (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>22</td>
<td>1.25</td>
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<tr>
<td>1,500</td>
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<tr>
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<td>104</td>
<td>6.0</td>
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<tr>
<td>3,000</td>
<td>130</td>
<td>7.5</td>
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</tbody>
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* A teaspoon of salt contains roughly 2300 mg or 100 mmol of sodium.

References