

2014 Consensus Conference on Nutrition: The Alignment of National/International Sodium Guidelines with Current Evidence

On May 14-16, 2014, the CAHS co-convened (with the World Heart Federation [WHF]) a Consensus Conference on Nutrition, held at the Population Health Research Institute of McMaster University and Hamilton Health Sciences. In a series of expert presentations, followed by extensive discussion and debate, invited participants examined current research and knowledge about the effects on cardiovascular events of a wide range of dietary nutrients. The WHF and the CAHS had put in place explicit guidelines in regard to conflict of interest, financial sponsorship, and program committee responsibilities (publically available on the conference website <http://www.nutritioncvd2014.com/body.cfm?id=1>).

CAHS took responsibility for a Symposium on Dietary Sodium: “*The Alignment of National/International Guidelines with Current Evidence*,” while the WHF managed other nutrients. In the sodium portion of the meeting, the agenda included speakers from the Global Burden of Diseases Group, the Canadian Sodium Working Group, the WHO Sodium Guidelines Group, and the American Heart Association Guidelines Committee. Their presentations provided essential context for presentations of new data (including the June 2013 report of the IOM Sodium Intake in Populations Expert Panel) challenging some of the evidence for recommendations for stringent restriction of dietary sodium.

Summary of Points with Reasonable Levels of Agreement among Speakers

Stuart MacLeod, MD, PhD, FRCPC of University of British Columbia, a Fellow of CAHS who is a clinical pharmacologist, chaired a workshop of the speakers on dietary sodium on the third day of the meeting and was charged with developing a summary of the dietary sodium proceedings. **John Cairns**, MD, FRCPC, the President of CAHS who is a cardiologist, was a member of the conference organizing committee and worked with Dr MacLeod on the preparation of the summary. MacLeod and Cairns are recognized for their research in fields outside of nutrition and the relationship of dietary sodium to blood pressure and cardiovascular events. Neither of them identifies a conflict of interest arising from public views about dietary sodium, participation in the guidelines of national agencies for dietary sodium, conduct of dietary sodium research or research support or compensation from the food industry. In the following they attempt to summarize the salient points around which they perceived reasonable levels of agreement among the participants in the meeting, although no formal consensus of views was undertaken.

1. Elevated blood pressure increases the risk of cardiovascular events (MI, stroke, CV death).
2. Most published reports indicate a positive association between dietary sodium intake and blood pressure
3. Observational studies generally have shown that excessive dietary sodium intake is associated with increased rates of cardiovascular events
4. Comprehensive assessment of national and subnational dietary surveys and 24-hour urine collections, find that sodium intake is high in every region of the world, and is especially high from Eastern Europe through to Southeast Asia. In the majority of countries intake

exceeds 3 g/d, and in about half of countries it exceeds 4 g/d. Average intake by adults in Canada is estimated at 3.4g of sodium daily; 85% of men and 60-80% of women consume more than 2300 mg/day.

5. In the 25% of the population with a blood pressure above 131/78 mmHg sodium reduction reduces blood pressure up to a mean of 5.5/3.0 mmHg depending on baseline blood pressure. In the 75% of the population with a blood pressure below 131/78 mmHg there is a minimal effect of sodium reduction on blood pressure.
6. Reduction of blood pressure by lowering dietary sodium is a surrogate for reduced cardiovascular events. There is epidemiological evidence for reduced CV events by lowering excessive dietary sodium, but no consistent evidence for the benefit of lowering dietary sodium below 3400 mg/day. There are many deficiencies identified in the observational trials, including unreliable measurement of 24 hr. urinary sodium, confounding by other nutrients and antihypertensive medications, and use of blood pressure as a surrogate for CV events.
7. There is no consistent RCT evidence for reduction of CV events by reducing dietary sodium. The complexities and costs of large and definitive RCTs have deterred efforts to mount such trials.
8. Most government agencies recommend dietary sodium intake be reduced to 2000-2300 mg/day, with recommendations as low as 1500 mg/day for those at higher than average risk of CV events.
9. There is some evidence indicating a “J-“ or “U- shaped” relationship between dietary sodium and CV events, with excess CV events occurring at levels not only above, but also below an optimal range. The precise limits of this range cannot be identified on the basis of available data. There are unresolved concerns about potential “reverse causality” in relation to low sodium takes.
10. The IOM report concluded a) there is a positive relationship between higher levels of sodium intake and risk of CVD, consistent with existing evidence on blood pressure as a surrogate marker of CVD risk, b) evidence from studies on direct health outcomes is insufficient and inconsistent regarding an association between sodium intake below 2300 mg/day and either risk or benefit of CV outcomes and c) direct evidence on health outcomes does not support recommendations to lower sodium intake within subgroups (diabetes, chronic renal disease, pre-existing CVD) to 1500 mg/day or less.
11. It seems likely that people consuming more than 3.4 g of sodium per day could safely reduce their intake.
12. The most important source of excess sodium intake on a population basis is through processed food. There is general agreement as to the likely public health benefits of reducing sodium in the food supply and the unlikelihood of harm even to those whose dietary sodium intake is already lower than average.
13. Legitimate scientific debate about the evidence supporting national dietary guidelines is essential to the advancement of knowledge, but may place the public health efforts of government agencies at risk by engendering uncertainty and confusion in the public and among physicians. Leading scientists should be encouraged to reach agreement on major elements of the evidence and support efforts to lower excessive sodium intake.

All sodium speakers were asked to identify the key points in regard to their topic. These were submitted by all but 2 of the speakers, whose key points were inferred from their publically

available summary slides: <http://www.nutritioncvd2014.com/body.cfm?id=1> The following attachment provides a listing of the sodium symposium speakers, the titles of their talks, and the key messages they have identified to the meeting working