SODIUM POSITION STATEMENT

BACKGROUND AND PURPOSE

This Position Statement is based on the scientific literature discussed in the *Summary of evidence on the impact of sodium on cardiovascular* disease (National Heart Foundation of New Zealand, 2011). It was developed to provide health professionals with an update on the impact of sodium intake on cardiovascular disease (CVD) and should be read in conjunction with the National Heart Foundation of Australia *Position Statement: The relationship between dietary electrolytes and cardiovascular disease* (National Heart Foundation of Australia, 2006). The recommendations made in this document are consistent with those of the National Heart Foundation of Australia.

KEY FINDINGS

High blood pressure is the leading global risk factor for all-cause mortality, outranking tobacco use, high blood glucose, physical inactivity, and overweight/obesity. In high-income countries, it is responsible for 17% of all deaths (World Health Organisation, 2009).

Throughout middle and old age, blood pressure (BP) is strongly and directly related to CVD mortality, without any evidence of a threshold, down to at least 115/75mmHg (Lewington et al, 2002). The authors reported that a 10mmHg lower usual systolic blood pressure was associated with a 40% lower risk of stroke death and about 30% lower risk of death from ischaemic heart disease or other vascular causes. Even a 2mmHg lower usual systolic blood pressure was associated with around 10% lower stroke mortality and 7% lower mortality from other vascular disease in middle age.

The 2006/2007 New Zealand Health Survey found that one in seven adults (13%) or 425,000 people reported taking medication for high blood pressure (Ministry of Health, 2008). This underestimates the number of people with high blood pressure, as not all those with high blood pressure will be diagnosed or were taking medication. In New Zealand in 1997, 11% of all deaths (3699) were attributed to high blood pressure (Stefanogiannis et al, 2005; Ministry of Health and the University of Auckland, 2003).

Sodium is an essential nutrient, but the main impact of too much sodium on health is to raise blood pressure (BP), a major risk factor for cardiovascular disease. The risk of cardiovascular disease increases as the level of BP increases. Sodium intake has long been known to influence BP among hypertensive patients (systolic BP > 140mm Hg or diastolic BP > 90mm Hg), but its effect among those without overt hypertension, as well as its effects on CVD, has been disputed. A review of the literature around sodium and its impact on CVD, especially through its impact on blood pressure, was conducted. Salt (40% sodium and 60% chloride) is the main source of sodium in the diet.

Converting salt to sodium: 1550mg sodium is equivalent to 4g of salt
2300mg sodium is equivalent to 6g of salt (approximately 1 teaspoon)

The sodium added to processed foods contributes about 75% of dietary sodium intake

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The Heart Foundation's key findings on the impact of sodium on BP and CVD are based on the scientific literature discussed in *Summary of evidence on the impact of sodium on cardiovascular disease* (National Heart Foundation of New Zealand, 2011). The variability in study results partly reflects the differences inherent in the designs of the different studies.

Key findings on the impact of sodium on BP and CVD

Impact of Sodium on BP

Sodium intake (over 1265 mg/day) is directly associated with BP

The Intersalt observational study reported:

- that at **1265mg** sodium/day or less, there was no evidence of high BP or increasing BP with age (Intersalt Cooperative Research Group, 1988),
- that for within-population analyses, individual intakes that were higher by **2300mg** sodium/day were associated with systolic BP that was higher, on average, by **3 - 6mm Hg** (Elliot et al, 1996).

It was estimated from the Intersalt study that a **2300mg**/day higher sodium intake over a **30 year period** from 25 years of age, translates into an approximate **10 - 11mm Hg** higher systolic BP at 55 years of age (Elliot et al, 1996).

Population-based interventions and meta-analyses of randomised controlled trials have shown that it is possible to achieve significant reductions in BP with reduced salt intake in both hypertensive and normotensive individuals:

A meta-analysis of sodium reduction trials (at least **4 weeks**) reported that a reduction of:

- **1800mg** sodium/day reduced systolic BP by **5mm Hg (hypertensive*),**
- **1700mg** sodium/day reduced systolic BP by **2mm Hg (normotensive**)** (He & McGregor, 2009).

TOPH II trial reported that at **36 months** observational followup, a modest sodium intake reduction (**920mg**/day) was associated with an 18% lower incidence of hypertension (Kumanyika, 2005).

Impact of Sodium + Diet on BP

The combination of reduced sodium and DASH* diet is particularly effective in reducing BP.**

Sodium intake reduced by **2070mg**/day for **30 days** using the "reduced-sodium + DASH diet" lowered the average systolic BP by **9mm Hg** (Sacks et al, 2001).

Impact of Sodium intake on CVD

Sodium intake is associated with incidence of strokes and total cardiovascular events.

A Finnish prospective study reported that a third reduction in salt intake was accompanied by a more than 10mm Hg lowering of the population average of both systolic and diastolic BP and a **75% to 80%** decrease in both stroke and coronary heart disease in the population **younger than 65 years** (Karppanen & Mervaala, 2006).

Meta-analysis of prospective studies reported that a difference of **2000mg** sodium/day in habitual salt intake is associated with a **23%** difference in the rate of stroke and **17%** difference in the rate of total CVD (Strazzollo et al, 2009).

Long-term observational follow up of randomised controlled trials reported reduction of between **760 and 1012mg** sodium/day resulted in a **25%** lower risk of CVD events (Cook et al, 2007).

When all of the findings from various types of research studies are considered, the evidence for the impact of sodium on blood pressure and thereby CVD is strong (He & McGregor, 2009).

*hypertensive - systolic BP >140 mm Hg
**normotensive - systolic BP < 140 mmHg
***DASH diet is high in fruit, vegetables, legumes, fish, nuts and low-fat dairy and contains more potassium, calcium, magnesium, fibre and protein than the typical western diet.

RECOMMENDATIONS

The following recommendations with respect to dietary sodium intake are made to improve the health of New Zealanders and reduce the current level of cardiovascular disease. The main focus for sodium reduction is salt added during food manufacture and discretionary salt.

These recommendations are based on the publication *Summary of evidence on the impact of sodium on cardiovascular disease* (National Heart Foundation of New Zealand, 2010) and the *Guide to Heart Healthy Eating* (National Heart Foundation of New Zealand, 2009).

The National Heart Foundation of New Zealand recommendations for reducing sodium intake:

ALL NEW ZEALANDERS

1. Reduce your sodium intake to 2300mg of sodium a day* (approximately 6 g salt) or less. This includes sodium from processed food.

2. Base your eating on the Heart Foundation's *Nine steps for heart healthy eating* (see below) with emphasis on minimally processed (fresh or plain) foods.

Nine steps for heart healthy eating:

- *Enjoy three meals a day, select from dishes that include plant foods and fish, and avoid dairy fat, meat fat or deep fried foods.*
- *Choose fruits and/or vegetables at every meal and for most snacks.*
- *Select whole grains, whole grain breads, or high-fibre breakfast cereals, in place of white bread and low-fibre varieties at most meals and snacks.*
- *Include fish or dried peas, beans and soy products, or small serving of lean meat or skinned poultry, at one or two meals each day.*
- *Choose low-fat milk, low-fat milk products, soy or legume products each day.*
- *Use small amounts of oil, margarine, nuts or seeds.*
- *Drink plenty of fluids each day, particularly water, and limit sugar-sweetened drinks and alcohol.*
- *Use only small amounts of total fats and oils, sugar and salt when cooking and preparing meals, snacks or drinks. Choose ready-prepared foods low in these ingredients.*
- *Mostly avoid or rarely include, butter, deep-fried and fatty foods; and only occasionally choose sweet bakery products.*

3. If you choose to eat some processed foods:

   Read Nutrition Information Panels (NIP) and choose the lowest sodium options available. Preferably choose foods without added salt in the ingredient list or “no added salt” on the front of pack

   Alternatively choose foods with “low salt” on the front of pack. “Low salt” means no more than 120mg sodium per 100g

4. Avoid adding salt during cooking and at the table.

5. Limit salty snacks and takeaway foods high in salt.

6. Discuss healthy eating and concerns about nutrition with a registered dietitian, registered nutritionist, your doctor or practice nurse.

7. Visit www.heartfoundation.org.nz or ring 09 571 9191 for further healthy eating information.

HEALTH PROFESSIONALS

When advising people with high blood pressure, heart failure or those with CVD, include nutrition recommendations above with the following amendments:

1. Reduce salt intake to 1600mg of sodium a day (approximately 4g salt a day), including salt in processed foods.

2. No addition of salt during cooking or at the table.

FOOD INDUSTRY

All sectors of the food industry – retailers, manufacturers, trade associations, caterers, public procurement and suppliers to the catering industry – are encouraged to be engaged in a salt-reduction programme to decrease the sodium content of foods within their product range.

Recommendations and strategies for reducing sodium in processed foods are addressed in *Reducing our sodium footprint: Project HeartSAFE Situation Analysis* (Project HeartSAFE, 2010).

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