Sodium

Background

Sodium is an essential mineral that helps maintain the body's fluid balance and normal cellular function. In healthy people, sodium balance is tightly regulated through integrated hormonal and neural control systems, with the kidneys adjusting sodium excretion to maintain stable plasma sodium concentrations despite substantial day-to-day variation in intake. Hormonal mechanisms regulate how much sodium is conserved or lost in urine, while thirst and water retention respond to changes in blood concentration and volume.

Sodium is present in small amounts in unprocessed foods, including meat, fish, fruits and vegetables (EFSA, 2019). However, the predominant source of dietary sodium is sodium chloride (salt) added to foods during manufacturing, processing, cooking, or at the table.

Once consumed, sodium is primarily absorbed in the small intestine. In healthy people, most dietary sodium is excreted via urine (around 90%), with some sodium lost in sweat and faeces (He & MacGregor, 2010). Loss of sodium in sweat depends on dietary intake, sweating rate, hydration and acclimatisation to heat.

Accurately estimating sodium intake using dietary assessment methods is challenging; in addition to general limitations - including potential for recall or social desirability bias (Shim et al., 2014; Subar et al., 2015) - dietary surveys often fail to account for or accurately quantify sodium from salt added to foods during cooking and at the table. Inaccuracies in the food composition data in relation to the sodium content of food are an additional limitation. Thus, estimating intake based on sodium excretion from a 24-hour urine sample is generally considered the most robust method (McLean et al., 2018).

Low sodium concentration in blood – or hyponatraemia - may result in symptoms ranging from malaise, nausea, vomiting and headache to impaired consciousness, seizures and coma. However, it typically occurs in the context of disorders of water or electrolyte balance rather than due to inadequate dietary sodium intake (EFSA,2019). Acute effects from high dietary sodium intake are also uncommon, with hypernatraemia (high blood sodium concentration) typically arising from dehydration, excessive sodium ingestion (e.g. self-poisoning) or clinical parenteral nutrition.

At a population level, the primary public health concern is excessive sodium intake. Long-term high sodium intake is strongly linked to increased systolic blood pressure, which is an independent risk factor for cardiovascular and renal disease morbidity and mortality. Evidence suggests that sodium influences chronic disease risk primarily through its effects on blood pressure, although the precise mechanisms are complex and not fully understood (US NASEM 2019). Although there is uncertainty about the relationship between sodium intake and blood pressure in childhood, studies suggest that blood pressure and cardiovascular disease risk tracks from early childhood into adulthood (Chen & Wang, 2008).

People with high blood pressure, overweight, diabetes, chronic kidney disease and of older age may be more sensitive to the blood pressure raising effects of sodium chloride. However, salt sensitivity varies considerably between individuals and is not well characterised (US NASEM 2019). Available evidence suggests that it is influenced by a combination of physiological, genetic, dietary, environmental and lifestyle factors (EFSA, Elijovich et al., 2016; 2019; Luzardo et al., 2015).

Other nutrients, such as potassium and to a lesser extent calcium, may influence blood pressure regulation and modify the relationship between sodium intake and health outcomes. However, current evidence is insufficient to support the derivation of NRVs based on nutrient ratios or interactions. Consequently, sodium recommendations for reducing chronic disease risk continue to be based on evidence relating sodium intake to blood pressure and chronic disease risk.

In both Australia and New Zealand, cardiovascular and kidney disease are major contributors to the burden of disease (AIHW, 2024, 2025; Institute for Health Metrics and Evaluation, 2024). Hypertension is also highly prevalent; data from 2022 suggests that more than one in ten Australians (11.6%, or 3 million people) had diagnosed hypertension, and almost one in four adults had high measured blood pressure (ABS, 2022). High blood pressure and dietary risks – including high sodium intakes - have been identified among the leading contributing risk factors. Current population sodium intakes are well above recommended levels, with median adult intakes estimated to exceed 3,200 mg/day and around 65% of the population exceeding current (2,000 mg/day) recommendations – excluding salt added at the table and in cooking (ABS, 2023b; Land et al., 2018; McLean et al., 2015; McLean et al., 2014; Wang et al., 2023).

The sodium content of the food supply, together with high consumption of processed foods, are key factors driving high population sodium intakes in Australia and New Zealand. Approximately 80% of dietary sodium intake is derived from processed foods (ie. any foods modified from their raw state), with 20% coming from salt added during cooking or at the table (Boorman, 2008; Food Standards Australia New Zealand, 2015; Wang et al., 2023). Around three quarters of Australians reporting adding salt during cooking or food preparation and around half adding salt at the table (ABS, 2023a). In both countries, major dietary sources of sodium include bread and bread-based products, cereal and grain-based mixed dishes and processed meats. (ABS, 2023a)(NZ REF). Discretionary foods – that is, foods and drinks not necessary to provide the nutrients the body needs - are significant contributors to dietary sodium, accounting for around 35 to 45% of daily intake (Bolton et al., 2020; Grimes et al., 2017; O'Halloran et al., 2016).

Sodium intakes are also influenced by broader social and environmental factors. Cultural and culinary practices, including the use of salt in cooking or reliance on high-sodium condiments and traditional dishes, contributes to variation in intake between population groups (Bennett et al., 2022; Bhat et al., 2020; Cheng et al., 2025). Socioeconomic factors also play a role, with people from low socioeconomic backgrounds or experiencing food insecurity more likely to consume diets higher in sodium (Bennett et al., 2022; de Mestral et al., 2017), in part due to the affordability and accessibility of processed foods. Together, these factors contribute to persistent disparities in sodium intake and related health outcomes, including hypertension and cardiovascular disease risk (AIHW, 2026a, 2026b).

Both Australia and New Zealand have committed to a global initiative aimed at reducing population salt intakes for chronic disease prevention (WHO, 2013). However, despite the introduction of initiatives to reduce sodium in the food supply and support lower consumption (Department of Health, 2023; FSANZ, 2026; Heart Foundation, 2026), population intakes and sodium levels in the food supply remain high (Coyle et al., 2025; Gomes et al., 2024; Wang et al., 2022). These findings indicate that further interventions may be required to support the population to achieve intakes aligned with sodium recommendations for the reduction of chronic disease risk.

1 mmol sodium = 23 mg sodium 1 gram of sodium chloride (salt) contains 390 mg (17 mmol) of sodium

Recommendations by Life Stage and Sex

The following Nutrient Reference Values for sodium have been established for the Australian and New Zealand populations. These recommendations are based on the best available scientific evidence and are designed to meet the nutritional needs of the general population across different life stages, while minimising the risk of both deficiency and excess intake. People who need nuanced advice on recommended nutrient intakes due to specific health conditions or other circumstances should seek individualised advice from a health professional.

The terms ‘Male' and ‘Female' in the Nutrient Reference Values are used as population categories because some nutrient requirements are influenced by physiological characteristics, including hormonal and reproductive factors. These categories may not fully reflect the diversity of sex characteristics, gender identities and individual circumstances across the Australian population. People whose physiology or medical circumstances differ from the assumptions underlying these categories, including some transgender, gender diverse and intersex people, may benefit from personalised advice from an appropriately qualified health professional.

Nutritional Adequacy Recommendations

Infants

Table 1. Recommendations for sodium intake in infants

Age	AI (mg/day)	AI (mmol/day)
0-6 months	120	5.2
7-12 months	170	7.4

Abbreviations: AI, Adequate Intake

Rationale: The AIs for infants were not reviewed in the 2017 or 2026 updates. The AI for 0-6 months was calculated by multiplying together the average intake of breast milk (0.78 L/day) and the average concentration of sodium of 160 mg/L from the studies of Dewey & Lonnerdal (1983), Gross et al (1980), Keenan et al (1982), Lemons et al (1982), Morriss et al (1986) and Picciano et al (1981). The AI for 7-12 months was extrapolated from that for 0-6 months from a consideration of metabolic body weights and relative energy requirements.

Children & Adolescents

This Adequate Intake (AI) recommendations for children and adolescents are presented in Table 2. *For alternative age groupings aligned with National Nutrition Survey data or school-age groups, see Appendix A.*

Table 2. Sodium intake recommendations for children and adolescents

Age	AI (mg/day)	AI (mmol/day)
Both sexes		
1 to under 4 years	400	17
4 to under 9 years	600	26
9 to under 14 years	800	34
14 to under 18 years	920	40

Abbreviations: AI, Adequate Intake

Rationale: There is insufficient evidence from which to derive recommendations for children. The AI for children was extrapolated from the adult AI based on relative energy requirements, with values rounded to smooth transitions between age groups and ensure the requirements of all children within an age bracket were met.

Adults

Recommendations for adults are presented by sex and age at Table 3.

Table 3. sodium intake recommendations for adults

<table>
<tr><th>Age</th><th>AI (mg/day)</th><th>AI (mmol/day)</th></tr>
<tr><td colspan="3">Males</td></tr>
<tr><td>18 to under 30 years</td><td rowspan="5">920</td><td rowspan="5">40</td></tr>
<tr><td>30 to under 50 years</td></tr>
<tr><td>50 to under 65 years</td></tr>
<tr><td>65 to under 75 years</td></tr>
<tr><td>75 years and older</td></tr>
<tr><td colspan="3">Females</td></tr>
<tr><td>18 to under 30 years</td><td rowspan="5">920</td><td rowspan="5">40</td></tr>
<tr><td>30 to under 50 years</td></tr>
<tr><td>50 to under 65 years</td></tr>
<tr><td>65 to under 75 years</td></tr>
<tr><td>75 years and older</td></tr>
</table>

Abbreviations: AI, Adequate Intake.

Rationale: Evidence for the sodium intake required to maintain physiological function is very limited, with sodium balance maintained across a wide range of intakes via homeostatic mechanisms. In 2006, the AI was established with a range of 460 to 920mg/day to reflect this uncertainty. In the 2026 review, the AI was revised to a single value aligned with the upper bound of the former AI range (920mg). This was a pragmatic decision taken to ensure consistent public health messaging about sodium intake requirements in the broader context in which population intakes exceed requirements and – for many individuals – chronic disease risk reduction targets. Selection of 920mg/day as the NRV reflects evidence from trials which found no adverse effects– or balance studies reporting positive balance – at intakes between 851 and 1,500 mg/day (Allsopp et al., 1998; Beard et al., 1982; Bolton et al., 2020; Palacios et al., 2004; Parker et al., 1990; Sciarrone et al., 1992; Todd et al., 2012). This value also falls within the lower tail of the observed distribution (between the 1st and 5th percentiles) of 24-hour urinary sodium excretion data from 549 adults sampled in 2016-17, suggesting that intakes at this level are observed in apparently healthy, free-living adults in Australia (Grimes, 2026).

Pregnancy

Table 4. sodium intake recommendations during pregnancy

Age	AI (mg/day)	AI (mmol/day)
Pregnancy (aged 14 years and over)	920	40

Abbreviations: AI, Adequate Intake.

Rationale: The sodium AI during pregnancy was established based on the AI for non-pregnant adults. This reflects the absence of evidence demonstrating increased dietary needs in pregnancy and the capacity for physiological regulation to maintain sodium balance across a wide range of intakes.

Lactation

Table 5. sodium intake recommendations during lactation

Age	AI (mg/day)	AI (mmol/day)
Lactation (aged 14 years and over)	920	40

Abbreviations: AI, Adequate Intake.

Rationale: The sodium AI during lactation was established based on the AI for non-lactating adults. This reflects the absence of evidence to suggest that sodium requirements during lactation differ from those of non-pregnant, non-lactating adults. Accordingly, no separate requirement is specified, and sodium recommendations for lactating women are aligned with those for the general adult population.

Chronic Disease Risk Reduction

These tables summarise Chronic Disease Risk Reduction (CDRR) recommendations for various age groups and life stages to assist in the prevention of chronic disease at a population level. *For alternative children's age groups aligned with national nutrition survey intake data or school-age groups, see Appendix A.*

Table 6. sodium chronic disease risk reduction recommendations

Age	CDRR (mg/day)	CDRR (mmol/day)
Infants		
0–12 months	Not set.	
Children & Adolescents		
1 to under 4 years	950	41
4 to under 9 years	1,250	54
9 to under 14 years	1,750	76
14 to under 18 years	2,000	86
Adults		
18 years and older	2000	86
Pregnancy & Lactation		
Pregnancy (aged 14 years and over)	2000	86
Lactation (aged 14 years and over)	2000	86

Abbreviations: CDRR, Chronic Disease Risk Reduction.

Rationale: There is moderate certainty evidence that sodium reduction lowers systolic blood pressure in both hypertensive and normotensive adults (Newberry et al., 2018). The CDRR of 2,000 mg/day was established in 2017, based on a meta-analysis showing a reduction of 2 mm Hg in systolic blood pressure when mean sodium excretion was lowered from about 3,500 mg/day to 2,100 mg/day (when corrected to the Australia and New Zealand population)(Department of Health, 2017). Evidence reviews undertaken to inform international NRVs have similarly concluded that a linear dose-response relationship exists, with blood pressure increasing with higher sodium intakes, although a single level at which the risk is less pronounced has not been identified (Blomhoff et al., 2023; EFSA, 2019; US NASEM, 2019). Consequently, the 2017 recommendation of 2,000 mg/day was retained in the 2026 review.

Recommendations for during pregnancy and lactation are based on those for non-pregnant or non-lactating adults, as there is no evidence of differing chronic disease risk from high sodium intakes among these populations.

Values for children and adolescents were extrapolated from the adult CDRR of 2,000 mg/day based on relative energy requirements and rounded to smooth transitions between groups. Although there is uncertainty about the relationship between sodium intake and blood pressure in childhood, a CDRR for children and adolescents was established due to evidence that blood pressure and cardiovascular disease risk tracks from childhood into adulthood (Chen & Wang, 2008) and noting that childhood dietary patterns shape adult food habits, including salty-taste acceptance (Chong, 2022; Hörnell & Lagström, 2024; Mahmood et al., 2021; Stein et al., 2012).

Appendix A — Alternative age groups for preschool, primary school and adolescent populations

To align with reporting age groups in the Australian Bureau of Statistics (ABS) National Nutrition Survey, ages have also been grouped to provide levels for preschoolers (2 to under 5 years), primary school age (5 to under 12 years) and adolescents (12 to under 18 years). The derivation of these values used the same methodology as outlined in the document above and is based on the same adult reference value. If you are not comparing to National Nutrition Survey data or school-age groups, the values for children and adolescents in the main document above should be used.

Recommendations

Nutritional Adequacy Recommendations

Table A1. Alternative age groups for preschool, primary school and adolescents – intake recommendations for sodium

Age	AI (mg/day)	AI (mmol/day)
Both sexes		
12 to under 24 months	350	15
2 to under 5 years	500	22
5 to under 12 years	700	30
12 to under 18 years	920	40

Abbreviations: AI, Adequate Intake.

Chronic Disease Risk Reduction

Table A2. Alternative age groups for preschool, primary school and adolescents – chronic disease risk reduction intake recommendations for sodium

Age	CDRR (mg/day)	CDRR (mmol/day)
Both sexes		
12 to under 24 months	850	37
2 to under 5 years	1,100	48
5 to under 11 years	1,500	65
12 to under 18 years	1,950	85

Abbreviations: CDRR, Chronic Disease Risk Reduction.

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