

FACTS

Salt

Reducing Sodium in the Diets of American Children

OVERVIEW

Currently, children are consuming salt in amounts that far exceed the recommended daily limits for sodium – and with potentially deadly consequences. High blood pressure was once considered to be an illness that affected mainly middle-aged or older individuals.



However, now there is an increasing prevalence of high blood pressure in American children that is linked to increasing obesity rates,¹ high sodium intake levels,¹ and high calorie diets which often begin in infancy and childhood.^{1,2,3} High blood pressure is one of the most common risk factors for cardiovascular disease, which is the leading cause of death and disability worldwide.⁴ High blood pressure also increases the risk for stroke,⁵ osteoporosis, stomach cancer, and kidney disease.⁵

After reaching middle age, 9 out of 10 Americans will go on to develop hypertension.⁶ The American Heart Association (AHA) advocates for a stepwise reduction in sodium consumption in the U.S. diet for children and adults to fewer than 1,500 mg/day by 2020. This, combined with a nutritious diet that is high in fruits, vegetables, fiber-rich whole grains; includes low-fat or fat free dairy; and contains fish twice per week can help to curb this growing epidemic.⁷

THE CURRENT STATE OF AFFAIRS

Children currently consume most of their salt from processed foods like pizza, French fries, breads, chicken dishes, deli meats, cheese, and foods eaten away from home.⁸ School lunches are also contributing to children's salty diets, providing an alarming average of 1,442 mg of salt in one meal.⁹

- Children ages 6-11 years old consume an average of more than 3,000 mg/day of sodium. Boys between the ages of 12 and 19 are particularly at high risk with an average daily sodium intake of over 4,000 mg/day.¹⁰
- The proportion of obese children and adolescents with pre-hypertension and hypertension combined is nearly 30%.¹¹



- Analysis of data from the Search for Diabetes in Youth Study, found the prevalence of elevated blood pressure among those with type 1 diabetes at 5.9% and the prevalence of elevated blood pressure among those with type 2 diabetes at 23.7%.¹²
- Non-Hispanic black children and Mexican Americans generally have a greater prevalence of high blood pressure and pre-hypertension than non-Hispanic white children, and the prevalence is greater in boys than in girls.⁹
- Children's salt preference is influenced by their food choices and food marketing.¹³ Their liking for salt may be reduced if they are exposed to lower sodium diets at a young age.^{14,15}
- The positive effect of sodium reduction on blood pressure in children is so pronounced that it can be seen as early as infancy.^{5,6}
- Increased regulations that limit competitive foods in the school environment and enhance the nutritional quality of the National School Lunch Program have shown to reduce the amount of sodium children consume.¹⁶



Unlike adults, there is no single reading that constitutes the threshold for high blood pressure and pre-hypertension for children. Normal blood pressure varies depending on age, sex, and height.

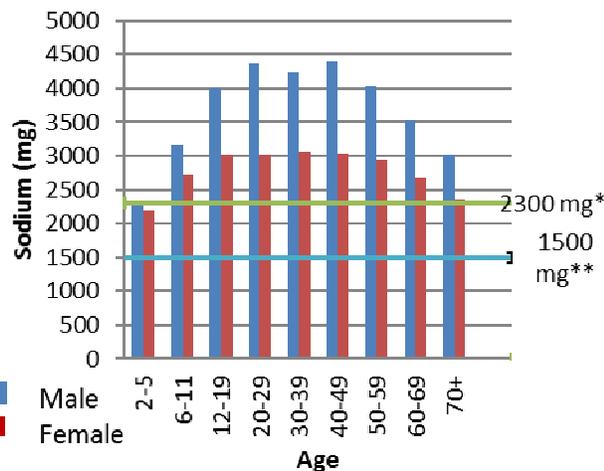


THE POPULATION AT RISK

Up to 74% of hypertensive children are not diagnosed with the condition because physicians have to assess age, sex and height in addition to the blood pressure measurement and they do not take time to do the calculations.¹⁷ Several studies have shown that children with high blood pressure show signs of enlargement of the left ventricle in the heart, blockage in the arteries, and diastolic dysfunction, all warning signs for heart disease.^{18,19} Additionally, hypertension in childhood is correlated with high blood pressure in adulthood.¹⁴⁻¹⁵

Mean Sodium Consumption in the U.S. by Gender and Age, 2007-2008

Source: What We Eat in America. NHANES, 2007-08



*The Upper Limit (UL) of 2300 mg per day refers to the highest daily level of sodium that is likely to pose no risk of adverse health effects to almost all individuals in the general population. The UL is not a recommended intake and there is no apparent benefit to consuming levels of sodium above the Adequate Intake (AI).

**The Adequate Intake (AI) of 1500 mg per day is the recommended average daily sodium intake level. The IOM set the AI for sodium for adults at 1500 mg per day to ensure that the overall diet provides sufficient amounts of other nutrients and to cover sodium sweat losses in physically active individuals.

ECONOMIC AND HEALTH BENEFITS

Reduction of sodium intake in children not only benefits the current generation of children, it also acts as a preventive measure against future cardiovascular disease in adulthood.²⁰ Cardiovascular disease is currently estimated to cost over \$600 billion a year, with hypertension alone costing over \$100 billion.²¹ A 9.5% drop in sodium intake would likely result in one million fewer cardiac events a year and a savings of over \$32 billion.¹⁷ A reduction in hypertension in children today would result in longer, healthier lives and may lower hospitalization costs in the future.

THE ASSOCIATION ADVOCATES

The opportunity to address lower sodium levels for children can be found in a broad range of initiatives. The American Heart Association will:

- Support implementation of the USDA's new evidence-based nutrition standards for school meals and competitive foods and beverages sold in schools.
- Support procurement standards for foods purchased by government agencies and employers that include criteria for strict sodium limits.
- Advocate for increasing availability of fruits and vegetables in schools through commodities, food purchasing, school gardens, and the Fresh Fruit and Vegetable Program.
- Support improving access to and affordability of fruits and vegetables in the community by providing various incentives. Examples include: incentives for small and mid-size farms to produce

specialty crops that can be distributed locally and regionally; the Farmers' Market Promotion Program (FMPP), which fosters community-led approaches to improve consumer access to healthy and fresh foods in low income neighborhoods; the Healthy Food Financing Initiative, which helps bring grocery stores into food deserts and low-income communities; and incentives in the Supplemental Nutrition Assistance Program (SNAP) which promote the purchase of healthy foods, especially fruits, vegetables, and high-fiber, whole grains.

- Advocate for other privately- or publicly-funded initiatives that support the purchase of healthy foods such as Double Up Food Bucks²² and Wholesome Wave.²³

¹ Lloyd-Jones DM, et al., 2010. American Heart Association Strategic Planning Task Force and Statistics Committee. Defining and Setting National Goals for Cardiovascular Health Promotion and Disease Reduction: The American Heart Association's Strategic Impact Goal Through 2020 and Beyond. *Circulation*. Feb 2;121(4):586-613.

² Tian, N., et al. 2013. Sodium and potassium intakes among US infants and preschool children, 2003–2010. *Am J Clin Nutr*: 98(4): 1113-1122.

³ Brazionis, L., et al. 2013. Diet spanning infancy and toddlerhood is associated with child blood pressure at age 7.5 y. *Am J Clin Nutr*: 97(6): 1375-1386.

⁵ Go, AS, et al. 2014. Heart Disease and Stroke Statistics -- 2014 Update: A Report From the American Heart Association. *Circulation*. Published online ahead of print. Accessed January 8, 2014.

⁵ Appel LJ, et al. 2011. The importance of population-wide sodium reduction as a means to prevent cardiovascular disease and stroke: a call to action from the American Heart Association. *Circulation*. Mar 15;123(10):1138-43.

⁶ Vasani RS, et al. 2002. Residual lifetime risk for developing hypertension in middle-aged women and men: The Framingham Heart Study. *JAMA*. 287:1003-1010.

⁷ American Heart Association. Dietary Recommendations for Healthy Children. 2013. Available at http://www.heart.org/HEARTORG/GettingHealthy/Dietary-Recommendations-for-Healthy-Children_UCM_303886_Article.jsp. Accessed January 9, 2014.

⁸ Drewnowski, A, et al. 2013. Sodium Intakes of US Children and Adults from Foods and Beverages by Location of Origin and by Specific Food Source. *Nutrients*: 5(6): 1840-1855.

⁹ Centers for Disease Control and Prevention. Under Pressure: Strategies for Sodium Reduction in the School Environment. http://www.cdc.gov/salt/pdfs/sodium_reduction_in_schools.pdf. Published 2011. Accessed September 12, 2011.

¹⁰ US Department of Agriculture, Agricultural Research Service. Sodium Intake in the US Population. 2011. Available at http://www.ars.usda.gov/sp2userfiles/place/12355000/pdf/dbrief/sodium_intake_0708.pdf

¹¹ McNiece, KL, et al. 2007. Prevalence of hypertension and pre-hypertension among adolescents. *J Pediatr*; 150(6): 640-644, 644 e641.

¹² Rodriguez BL, et al. 2010. Prevalence and correlates of elevated blood pressure in youth with diabetes mellitus: the Search for Diabetes in Youth Study. *J Pediatr*; 157:245–251.

¹³ Cornwell TB, et al. 2011. Alternative thinking about starting points of obesity. Development of child taste preferences. *Appetite*. Apr; 56(2):428-39.

¹⁴ Stein, LJ, et al. 2012. The development of salty taste acceptance is related to dietary experience in human infants: a prospective study. *Am J Clin Nutr*; 95(1): 123-129.

¹⁵ Stein LJ, et al. 2012. The development of salty taste acceptance is related to dietary experience in human infants: a prospective study. *Am J Clin Nutr*. Jan;95(1):123-9.

¹⁶ United States Department of Agriculture. School Nutrition Dietary Assessment Study-II: Summary of Findings. 2001.

¹⁷ Hansen ML, et al. 2007. Underdiagnosis of hypertension in children and adolescents. *JAMA*. Aug 22;298(8):874-9.

¹⁸ Litwin M, et al. 2006. Left Ventricular Hypertrophy and Arterial Wall Thickening in Children With Essential Hypertension. *Pediatr Nephrol*. 2006 Jun;21(6):811-9.

¹⁹ Daniels SD, et al. 1990. Determinants of Cardiac Involvement in children and Adolescents with Essential Hypertension. *Circulation*. Oct;82(4):1243-8.

²⁰ Smith-Spangler CM, et al. 2010. Population strategies to decrease sodium intake and the burden of cardiovascular disease: a cost-effectiveness analysis. *Ann Intern Med*. Apr 20;152(8):481-7, W170-3.

²¹ American Heart Association. Policy Report: Volume 1, Issue 2. 2013. Available at http://www.heart.org/idc/groups/heart-public/@wcm/@adv/documents/downloadable/ucm_457761.pdf. Accessed on January 14, 2014.

²² Fair Food Network. <http://www.doubleupfoodbucks.org/>. 2012.

²³ Wholesome Wave. <http://wholesomewave.org/>. 2012