

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. Now, due to high sodium intake coupled with high calorie diets which often begin in infancy and childhood^{1,2,3} and



the obesity epidemic there is an increasing prevalence of high blood pressure in U.S. children.⁴ High blood pressure is one of the most common risk factors for cardiovascular disease - the leading cause of death and disability worldwide.⁵ High blood pressure also increases the risk for stroke, osteoporosis, stomach cancer and kidney disease.⁶

An estimated nine in ten Americans will develop high blood pressure during their lifetimes.⁷ The American Heart Association (AHA) advocates for a stepwise reduction in sodium consumption in the U.S. diet for children and adults to less than 1500 mg/day by 2020. This, combined with a nutritious diet that is high in fruits, vegetables, high-fiber, whole grains, low-fat or fat free dairy, and fish twice per week⁴ can help to curb this growing epidemic.

THE CURRENT STATE OF AFFAIRS

Children currently consume most of their salt from processed foods like chicken dishes, pizzas, tacos, hot dogs 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



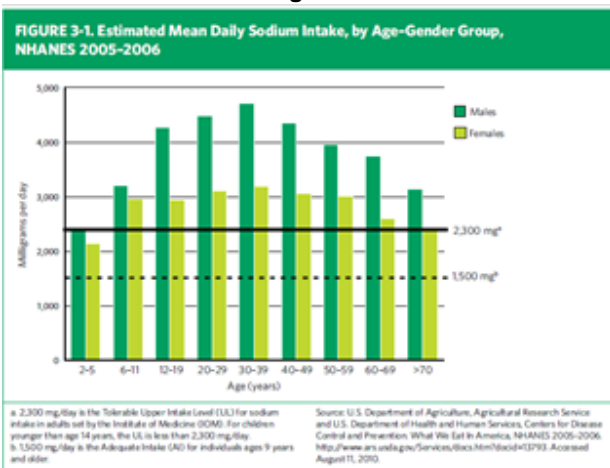
- Children ages 6-11 year old consume an average of over 3,000 mg/day of sodium. Boys between the ages of 12 and 19 are at particularly high risk with an average daily sodium intake of over 4,000 mg/day.⁸

- The proportion of children and adolescents with pre-hypertension rose from 7.7 percent to 10 percent between 1988 and 2002, while the rate of hypertension increased from 2.7 percent to 3.7 percent.¹⁰
- 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%.¹¹
- 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.¹² Their liking for salt may be reduced if they are exposed to lower sodium diets at a young age.¹³
- 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}
- In one study, children consuming more fruits, vegetables, and low-fat dairy had an average systolic blood pressure that was 7 mm Hg lower than their counterparts who ate less healthy foods.¹⁴



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.

FACT SHEET: Salt: Reducing Sodium in the Diet of American Children



THE POPULATION AT RISK

Unfortunately, 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.¹⁵ Several studies have shown that children with high blood pressure show signs of left ventricular hypertrophy, intima-media thickness, arterial compliance, atherosclerosis, and diastolic dysfunction, all warning signs for heart disease.^{16,17} Additionally, hypertension in childhood is correlated with hypertension in adulthood.¹⁴⁻¹⁵

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.¹⁸ The annual cost of cardiovascular disease is in excess of \$444 billion, with hypertension alone costing a total of \$93.5 billion.¹⁶ 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 Reducing hypertension in children today would result in longer, healthier lives and may lower hospitalization costs in the future.

THE AHA ADVOCATES

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

- Advocate for implementation of the proposed evidence-based USDA school meal standards.
- Continue to support robust nutrition standards for competitive foods and beverages in schools that are based on a 1500 mg sodium target by 2020.
- Advocate for industry adoption of the Interagency Working Group proposed nutrition principles for foods marketed and advertised to children.
- 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 Fruit and Vegetable Snack program.
- Support increasing the access to and affordability of fruits and vegetables in the community by providing incentives to small and mid-size farms to produce specialty crops like fruits and vegetables and distribute locally and regionally; the Farmers' Market Promotion Program (FMPP), foster community-led approaches to improve consumer access to healthy and fresh foods in low income neighborhood; and incentives in the Supplemental Nutrition Assistance Program (SNAP) that 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 Bucks and Wholesome Wave.

References

- ¹ Lloyd-Jones DM, et al., 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*. 2010 Feb 2;121(4):586-613.
- ² Hofman A, Hazebroek A, Valkenburg HA. A randomized trial of sodium intake and blood pressure in newborn infants. *JAMA*. 1983 Jul 15;250(3):370-3.
- ³ He FJ, MacGregor GA. Importance of Salt in Determining Blood Pressure in Children: Meta Analysis of Controlled Trials. *Hypertension*. 2006 Nov;48(5):861-9.
- ⁴ Urrutia-Rojas X, Egbuchunam CU, Bae S, Menchaca J, Bayona M, Rivers PA, Singh KP. High blood pressure in school children: prevalence and risk factors. *BMC Pediatr*. 2006 Nov 16;6:32.
- ⁵ He FJ, MacGregor GA. A comprehensive review on salt and health and current experience of worldwide salt reduction programmes. *J Hum Hypertens* 2008. Available at: <http://www.nature.com/jhh/journal/vaop/ncurrent/abs/jhh2008144a.html>.
- ⁶ Appel LJ, Frohlich ED, Hall JE, Pearson TA, Sacco RL, Seals DR, Sacks FM, Smith SC Jr, Vafiadis DK, Van Horn LV. 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*. 2011 Mar 15;123(10):1138-43.
- ⁷ Vasan RS, Beiser A, et al., Residual lifetime risk for developing hypertension in middle-aged women and men: The Framingham Heart Study. *JAMA*. 2002; 287:1003-1010.
- ⁸ US Dept of Agriculture, US Dept of Health and Human Services. Dietary Guidelines for Americans 2010. www.dietaryguidelines.gov. Published 2010. Accessed September 13, 2011.
- 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 Din-Dzietham R, Liu Y, Bielo MV, Shamsa F. High blood pressure trends in children and adolescents in national surveys 1963-2002. *Circulation* 2007, 116:1488-1496.
- ¹¹ Rodriguez BL, Dabelea D, Liese AD, Fujimoto W, Waitzfelder B, Liu L, Bell R, Talton J, Snively BM, Kershner A. Prevalence and correlates of elevated blood pressure in youth with diabetes mellitus: the Search for Diabetes in Youth Study. *J Pediatr*. 2010;157:245-251.
- ¹² Cornwell TB, McAlister AR. Alternative thinking about starting points of obesity. Development of child taste preferences. *Appetite*. 2011 Apr;56(2):428-39. Epub 2011 Jan 14.
- ¹³ Bernstein IL. Salt preference and development. *Developmental Psychology*, Vol 26(4), Jul 1990, 552-554
- ¹⁴ Moore LL, Singer MR, Bradley ML, Djoussé L, Proctor MH, Cupples LA, Ellison RC. Intake of fruits, vegetables, and dairy products in early childhood and subsequent blood pressure change. *Epidemiology*. 2005 Jan;16(1):4-11.
- ¹⁵ Hansen ML, Gunn PW, Kaelber DC. Underdiagnosis of hypertension in children and adolescents. *JAMA*. 2007 Aug 22;298(8):874-9.
- ¹⁶ Litwin M, Niemirska A, Sładowska J, Antoniewicz J, Daszkowska J, Wierzbicka A, Wawer ZT, Grenda R. Left Ventricular Hypertrophy and Arterial Wall Thickening in Children With Essential Hypertension. *Pediatr Nephrol*. 2006 Jun;21(6):811-9. Epub 2006 Mar 25
- ¹⁷ Daniels SD, Meyer RA, Loggie JM. Determinants of Cardiac Involvement in children and Adolescents with Essential Hypertension. *Circulation*. 1990 Oct;82(4):1243-8.
- ¹⁸ Smith-Spangler CM, Jussola JL, Enns EA, Owens DK, Garber AM. Population strategies to decrease sodium intake and the burden of cardiovascular disease: a cost-effectiveness analysis. *Ann Intern Med*. 2010 Apr 20;152(8):481-7, W170-3. Epub 2010 Mar 1.