



## Salt of the Earth

### Reducing Sodium in the U.S. Diet

#### OVERVIEW

One in 10 cardiovascular deaths worldwide have been attributed to consuming too much sodium.<sup>1</sup> High sodium intake is associated with high blood pressure.<sup>2</sup> About 1 in 3 adults living in the U.S. have high blood pressure<sup>3</sup> and only half have their high blood pressure under control.<sup>4</sup> Alarming, many youth are also being diagnosed with high blood pressure.<sup>5</sup> This common condition increases the risk for heart disease and stroke, two leading causes of death in the U.S.<sup>3</sup>

One in 10 cardiovascular deaths have been attributed to sodium intake of greater than 2,000 milligrams a day.<sup>6</sup> On average, that level is exceeded by 99.2 percent of the world's adults.<sup>6</sup> In the U.S., it is estimated that 66,508 deaths, 9.5 percent of all cardiometabolic deaths, were attributed to high sodium diets.<sup>7</sup>

The American Heart Association advocates for a multifaceted, stepwise reduction in sodium consumption in the diet. The association further recommends a simultaneous sustained commitment by the food and restaurant industries to reduce the amount of salt added to the food supply.

#### Primary Sources of Sodium in the Average U.S. Diet



- 5% added while cooking
- 6% added while eating
- 12% from natural sources
- 77% from processed and prepared foods

Adapted from Harnack et al. 2017

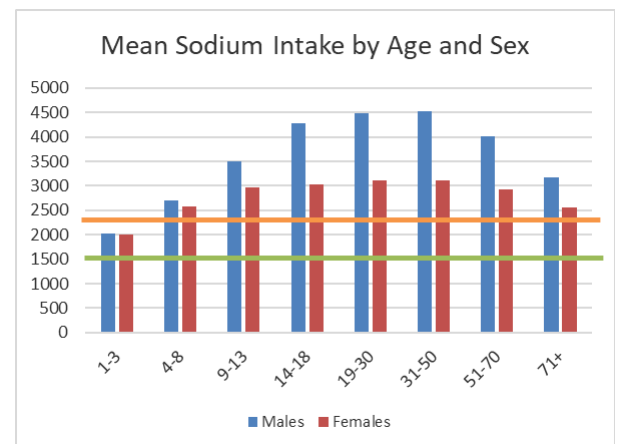
#### AMOUNT OF SODIUM IN THE U.S. DIET

On average Americans consume 3,440 mg of sodium per day.<sup>8</sup> Only a small amount of total sodium intake comes from sodium naturally occurring in foods (14 percent), from salt added in home cooking (6 percent), or at the table (5 percent).<sup>9</sup> More than 70 percent of the sodium Americans consume comes from processed, prepackaged, and restaurant foods.<sup>8</sup> Mixed dishes including burgers, sandwiches, and tacos; rice, pasta, and grain dishes; pizza; meat, poultry, and seafood dishes; and soups account for almost half of the sodium consumed in the U.S.<sup>7</sup> These foods are often commercially processed or prepared. The American Heart Association recommends that the maximum intake for the U.S. population should be 1,500 mg per day for optimal cardiovascular health.

Diets rich in potassium can blunt the effects of high sodium intake and lower blood pressure.<sup>10</sup> Consistent with these benefits, potassium-rich diets are associated with lower risk of cardiovascular disease, especially stroke.<sup>11</sup> However, fewer than 2 percent of adults living in the U.S. consume enough potassium.<sup>12</sup> Dietary sources of potassium include fruits, vegetables, whole grains, legumes, and nuts.<sup>7</sup> Given the high intake of sodium and low intake of potassium in the U.S., it is important to both pursue reducing sodium consumption and increasing potassium consumption. Increasing potassium consumption on its own is not a feasible solution to the high levels of sodium consumption in the U.S.

#### THE POPULATION AT RISK

The 2015 Dietary Guidelines for Americans recommend that adults in the U.S. consume no more than 2,300 mg of sodium daily, and specific populations with prehypertension or hypertension should aim for 1,500 mg or less per day.<sup>7</sup> About half the U.S. adult population faces increased risk of high blood pressure due to excess sodium, particularly black people; people over age 50; and people with diabetes or chronic kidney disease.<sup>13</sup> Blood pressure of black people living in the U.S. is among the highest in the world, 57.6 percent of non-Hispanic black males and 53.2 percent of non-Hispanic black females have high blood pressure.<sup>14</sup> Approximately 41 percent of U.S. adults are projected to have hypertension by 2030.<sup>15</sup> Reducing sodium consumption to the Dietary Guidelines for Americans recommendation of 2,300 mg per day would be great progress in improving the health of Americans.



Adapted from: NHANES data, 2007-2010  
 — Represents the Dietary Guideline's recommendation of no more than 2,300 mg of sodium per day  
 — Represents the association's recommendation of less than 1,500 mg of sodium per day and the current Dietary Guideline's recommendation of sodium intake for special populations

## FACT SHEET: Reducing Sodium in the U.S. Diet

### ECONOMIC AND HEALTH BENEFITS

A government-supported national policy to reduce sodium by 10 percent over ten years would be cost effective in most countries across the world, including the U.S.<sup>16</sup> This cost effectiveness is seen even without accounting for healthcare savings that come from preventing heart attacks and stroke.<sup>16</sup> The many benefits of lowering sodium intake underscore the need for a comprehensive, coordinated public health strategy to lower the amount of sodium in the average person's diet.

The U.S. Food and Drug Administration (FDA) has proposed voluntary sodium targets for processed and commercially prepared foods. If those targets were achieved, it could prevent approximately 450,000 cases of cardiovascular disease, gain approximately 2.1 million discounted quality-adjusted life years, and produce discounted cost savings (health savings minus policy costs) of approximately \$41 billion.<sup>17</sup>

In the United Kingdom, voluntary sodium guidelines for packaged and restaurant foods led to considerable reductions of sodium in the food supply—and a concurrent 15 percent reduction in sodium intake in a sample of the population as well as reduction in blood pressure, heart attacks, and strokes.<sup>18</sup>

### THE AMERICAN HEART ASSOCIATION ADVOCATES

The majority of people in the U.S. would experience health benefits from an overall reduction in sodium.<sup>10</sup> Therefore, the association is committed to collaborating with its national and state partners to implement a successful sodium reduction strategy. The association will:

- Collaborate with the Food and Drug Administration, the U.S. Department of Agriculture, the Centers for Disease Control and Prevention, the National Forum for Heart Disease and Stroke Prevention, as well as other organizations, to achieve lower sodium levels in the food supply, address food labeling, develop consumer education campaigns, and promote a progressive sodium reduction strategy to lower the daily consumption of sodium.
- Support efforts by food manufacturers, restaurants, and other food service companies to reduce sodium in their products, and support the FDA's voluntary sodium targets and once released, encourage companies to adopt them.
- Work to ensure that sodium and other nutrition information is available in all restaurants at point of purchase and educate consumers about the value of that information to their health.
- Advocate at the state and federal level for nutrition standards that reduce sodium in school foods as well as for foods and beverages marketed and advertised to children.
- Monitor industry's efforts to maximize technologies that remove sodium from the food supply and advocate for economic incentives for manufacturers and retailers to develop sodium reduction plans.
- Continue to develop robust surveillance at the state and national level for sodium consumption in the U.S. population, including an updated and comprehensive food database to track sodium changes in the food supply over time.
- Promote robust standards for foods purchased and provided by local, state, and federal government agencies, schools, recipients of government funds (private contractors, grantees), employers, and food retailers.
- Advocate for incentives for health insurers and providers to offer sodium-related consultation/education to patients with high blood pressure or who are at risk for high blood pressure.
- Work with state departments of health to develop statewide stakeholder groups, identify state-based surveillance opportunities, include sodium objectives in state heart disease and stroke prevention plans, and develop a policy agenda for sodium initiatives.
- Promote participation by national, state, and local partners in Million Hearts™,<sup>19</sup> an initiative that brings together communities, health systems, nonprofit organizations, state and federal agencies, and private-sector partners from across the country to fight heart disease and stroke and includes a focus on reducing sodium in the food supply.

<sup>1</sup> Mozaffarian D, Fahimi S, Singh GM, et al. Global sodium consumption and death from cardiovascular causes. *N Engl J Med* 2014;371:624–34. Retrieved from : [https://www.nejm.org/doi/10.1056/NEJMoa1304127?url\\_ver=Z39.88-2003&rft\\_id=ori%3Arid%3Acr%3Apub%3Dwww.ncbi.nlm.nih.gov](https://www.nejm.org/doi/10.1056/NEJMoa1304127?url_ver=Z39.88-2003&rft_id=ori%3Arid%3Acr%3Apub%3Dwww.ncbi.nlm.nih.gov)

<sup>2</sup> He FJ, MacGregor GA. Effect of longer-term modest salt reduction on blood pressure. *Cochrane Database Syst Rev* 2013;4:CD004937. Retrieved from : <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD004937.pub2/epdf/full>

<sup>3</sup> Merai R, Siegel C, Rakotz M, Basch P, Wright J, Wong B, DHSc., Thorpe P. CDC Grand Rounds: A Public Health Approach to Detect and Control Hypertension. *MMWR Morb Mortal Wkly Rep.* 2016 Nov 18;65(45):1261-1264. Retrieved from : <https://www.cdc.gov/mmwr/volumes/65/wr/mm6545a3.htm>

<sup>4</sup> Yoon SS, Fryar C, Carroll M. Hypertension prevalence and control among adults: United States, 2011–2014. National Center for Health Statistics data brief, November 2015;(220):1–8. Retrieved from : <https://www.cdc.gov/nchs/data/databriefs/db220.pdf>

<sup>5</sup> Jackson SL, Zhang Z, Wiltz JL, et al. Hypertension Among Youths — United States, 2001–2016. *MMWR Morb Mortal Wkly Rep* 2018;67:758–762. Retrieved from : <https://www.cdc.gov/mmwr/volumes/67/wr/mm6727a2.htm>

<sup>6</sup> Mozaffarian D, Fahimi S, Singh GM, et al. Global sodium consumption and death from cardiovascular causes. *N Engl J Med* 2014;371:624–34. Retrieved from : [https://www.nejm.org/doi/10.1056/NEJMoa1304127?url\\_ver=Z39.88-2003&rft\\_id=ori%3Arid%3Acr%3Apub%3Dwww.ncbi.nlm.nih.gov](https://www.nejm.org/doi/10.1056/NEJMoa1304127?url_ver=Z39.88-2003&rft_id=ori%3Arid%3Acr%3Apub%3Dwww.ncbi.nlm.nih.gov)

<sup>7</sup> Micha R, Peñalvo JL, Cuddeba F, Imamura F, Rehm CD, Mozaffarian D. Association between dietary factors and mortality from heart disease, stroke, and type 2 diabetes in the United States. *JAMA.* 2017;317:912–924. doi: 10.1001/jama.2017.0947. Retrieved from : <https://www.ncbi.nlm.nih.gov/pubmed/28267855>

<sup>8</sup> U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015–2020 Dietary Guidelines for Americans. 8th Edition. December 2015. Retrieved from : <http://health.gov/dietaryguidelines/2015/guidelines/>.

<sup>9</sup> Harnack et al. Sources of Sodium in US Adults From 3 Geographic Regions. *Circulation.* May 2017. Retrieved from : <https://www.ahajournals.org/doi/abs/10.1161/circulationaha.116.024446>

<sup>10</sup> Binia A, Jaeger J, Hu Y, Singh A, Zimmermann D. Daily potassium intake and sodium-to-potassium ratio in the reduction of blood pressure: a meta-analysis of randomized controlled trials. *J Hypertens.* 2015;33:1509–1520. doi: 10.1097/HJH.0000000000000661.

<sup>11</sup> Kateropoulos AP, Georgiopoulos VV, Murphy RA, Newman AB, Bauer DC, Harris TB, Yang Z, Applegate WB, Kritchevsky SB. Dietary sodium content, mortality, and risk for cardiovascular events in older adults: the Health, Aging, and Body Composition (Health ABC) Study. *JAMA Intern Med.* 2015;175:410–419. doi: 10.1001/jamainternmed.2014.6278. Retrieved from : <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4785822/>

<sup>12</sup> Cogswell ME, et al. (2012). Sodium and potassium intakes among US adults: NHANES 2003–2008. *The American journal of clinical nutrition* 96.3: 647–657.

<sup>13</sup> Centers for Disease Control and Prevention (CDC). *Usual sodium intakes compared with Dietary Guidelines.* *MMWR Morb Mortal Wkly Rep.* 2011;60(41):1413–1417. Retrieved from : <https://www.cdc.gov/mmwr/pdf/wk/mm6041.pdf>

<sup>14</sup> Virani SS, et al. Heart disease and stroke statistics—2020 update: a report from the American Heart Association. *Circulation.* 2020;141:e139–e596. <https://doi.org/10.1161/CIR.0000000000000757>

<sup>15</sup> Benjamin EJ, et al. Heart disease and stroke statistics—2018 update: a report from the American Heart Association. *Circulation.* 2018;137:e67–e492. DOI: 10.1161/CIR.0000000000000558. Retrieved from : <https://www.ahajournals.org/doi/pdf/10.1161/CIR.0000000000000558>

<sup>16</sup> Webb et al. Cost Effectiveness of a Government Supported Policy Strategy to Decrease Sodium Intake. *BMJ.* 2017;356:i6699 | doi: 10.1136/bmj.i6699. Retrieved from : <https://www.bmj.com/content/356/bmj.i6699>

<sup>17</sup> Pearson-Stuttard J, Kyridemos C, Collins B, Mozaffarian D, Huang Y, Bandosz P, et al. (2018) Estimating the health and economic effects of the proposed US Food and Drug Administration voluntary sodium reformulation: Microsimulation cost-effectiveness analysis. *PLoS Med* 15(4): e1002551. Retrieved from : <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002551>

<sup>18</sup> He, et al. Salt reduction in England from 2003 to 2011: its relationship to blood pressure, stroke and ischaemic heart disease mortality. *BMJ Open* 2014;4:e004549 doi:10.1136/bmjopen-2013-004549. Retrieved from : <https://bmjopen.bmj.com/content/bmjopen/4/4/e004549.full.pdf>

<sup>19</sup> Million Hearts. Retrieved from <https://millionhearts.hhs.gov/>. Accessed January 2019.