

# Getting the Message Right: Reducing Sodium Intake Saves Lives

Jenifer E. Clapp,<sup>1</sup> Christine J. Curtis,<sup>1</sup> Susan M. Kansagra,<sup>1</sup> and Thomas A. Farley<sup>1</sup>

Most people in the United States consume too much sodium. That conclusion, based on decades of research of various designs, is accepted widely by experts and was reaffirmed in a recent report by the Institute of Medicine, “Sodium Intake in Populations: Assessment of Evidence.” However, misinterpretation of the report’s purpose and conclusions in subsequent press coverage threatens to reverse the gains made in public and provider understanding about the benefits of achieving healthier levels of sodium consumption. Given this, we clarify why reducing sodium intake remains a health imperative.

Adults in the United States consume an average of 3,400 mg of sodium per day, far in excess of the 2010 *Dietary Guidelines for Americans* recommended daily limit of 2,300 mg.<sup>1,2</sup> Reducing sodium intake benefits people with hypertension and normal blood pressure, and the blood pressure–lowering effect of reduced sodium intake is greater for blacks, middle-aged adults, seniors, and people with hypertension, diabetes, and chronic kidney disease than others.<sup>3</sup> Increased sodium intake is positively related to higher blood pressure,<sup>4</sup> and high blood pressure is a powerful risk factor for heart disease and stroke. Heart disease is the leading cause of death in the United States, causing 596,339 deaths in 2011.<sup>5</sup> Almost half of all cardiovascular disease–related deaths in the United States are attributable to hypertension.<sup>6</sup> As a result, reducing sodium intake may be second only to controlling tobacco as the most effective intervention to prevent deaths from chronic disease.<sup>7,8</sup>

The Institute of Medicine Committee on the Consequences of Sodium Reduction in Populations examined evidence regarding the health outcomes of consuming 1,500–2,300 mg of sodium per day. Unsurprisingly, the committee’s report affirmed that higher levels of sodium intake are associated with hypertension and risk of cardiovascular disease.<sup>9</sup> Although the medical research that the committee reviewed supported efforts to lower population sodium intake, the committee did not find sufficient evidence regarding the cardiovascular benefits or risks of lowering sodium intake to below 2,300 mg per day for the general population or to 1,500 mg per day for specific populations at higher risk of cardiovascular disease, such as blacks, people aged >50 years, and those with hypertension, diabetes, or chronic

kidney disease. The exception was individuals with moderate or severe congestive heart failure who are receiving certain therapeutic treatments, who may experience greater risk of adverse health effects when consuming lower sodium intake levels. The committee concluded that more research is needed regarding lower levels of sodium intake because “evidence from studies on direct health outcomes is inconsistent and insufficient” to fulfill the committee’s charge to determine the health impacts of lowering sodium intake to <2,300 mg per day.<sup>9</sup>

In fact, the committee’s conclusions and recommendations were based on the assessment of a limited group of studies that examined the direct health outcomes of sodium intake between 1,500 mg and 2,300 mg per day.<sup>10</sup> The studies measured adverse health events, such as myocardial infarction or all-cause mortality; the committee excluded from its review studies that used blood pressure as a proxy for cardiovascular disease. The use of blood pressure as a surrogate endpoint for cardiovascular disease outcomes is widely used because of the strong positive and causal relationship between blood pressure and cardiovascular risk.<sup>11</sup> Furthermore, by narrowing its review to studies that measured adverse health events as outcomes, the committee also was limited to studies of specialized populations at very high risk, such as people with congestive heart failure, which may not be generalizable to the US population.

To put this report in context, the question that it explored affects not whether Americans should consume less sodium, but how much less should be consumed. Although the report concluded that excessive sodium intake is harmful to health, it did not define the level deemed to be “excessive.” The report’s support for continued efforts to lower population sodium intake clearly indicates that the authors consider current intake levels to be too high. Evaluating targets for sodium intake can help inform consumer messaging and shape long-term public goals, but it is not directly relevant to the 90% of Americans who consume more than the accepted target of 2,300 mg of sodium on a usual day and who would benefit from reducing their sodium intake.

The report’s limited scope and relevance to the public, combined with the committee’s conclusion that its findings were consistent with efforts to lower sodium intake, make

Correspondence: Jenifer E. Clapp (jclapp@health.nyc.gov).

Initially submitted July 2, 2013; date of first revision July 15, 2013; accepted for publication July 22, 2013.

<sup>1</sup>New York City Department of Health and Mental Hygiene, New York, New York.

doi:10.1093/ajh/hpt146

© American Journal of Hypertension, Ltd 2013. All rights reserved. For Permissions, please email: journals.permissions@oup.com

it difficult to understand why the report's media coverage created a sense of controversy. The *New York Times* stated that the report "undercuts years of public health warnings"<sup>12</sup> and that "it is disturbing to learn how little evidence exists that such reductions would actually be beneficial to health."<sup>13</sup> This observation could mislead readers, not just about the report's findings but also about what readers need to know to make informed decisions for their own health. The Institute of Medicine does not suggest that individuals should consume >2,300mg of sodium daily or that we should abandon efforts to lower population sodium intake at large. When highly regarded media outlets frame health messages inaccurately, as they did here, we risk losing the achievements made as a result of long-standing public health messages. Given that sodium intake is high and that the benefit of lowering intake is well established, innovative policies and programs to lower population sodium intake should be pursued aggressively.

Reducing sodium intake is not easy for individuals given the ubiquity of sodium in processed foods. Sodium added to foods before point of purchase accounts for almost 80% of sodium intake.<sup>14</sup> The challenge of reducing population sodium intake is so great and the potential health benefits so promising that in 2010 a different Institute of Medicine committee issued a report on "Strategies to Reduce Sodium Intake in the United States," which recommended that the US Food and Drug Administration set mandatory national standards for sodium in foods.<sup>15</sup>

Recognizing the importance of industry action, the New York City Health Department coordinates the National Salt Reduction Initiative (NSRI), a growing coalition of >90 city and state health authorities and organizations that aims to lower population sodium intake through voluntary corporate commitments. The NSRI framework demonstrates the feasibility of developing stepwise sodium targets across a wide range of food categories. To date, 28 companies have committed to NSRI targets; major food manufacturers have announced that they successfully met the 2012 sodium targets, indicating that progress on reducing sodium levels in processed food is possible. At the same time, the New York City Health Department is continuing its other efforts to reduce sodium intake of New Yorkers, including making consumers aware of the importance of reading and comparing food labels and increasing access to fresh fruits and vegetables.

Although future research may inform aspects of sodium reduction strategies and the intake targets for subpopulations, current research conclusively supports reducing population sodium intake. We must continue to build consensus around the greatest opportunities for chronic disease prevention, and we strongly believe that given the current high levels of sodium consumption and the preponderance of scientific evidence supporting lower consumption, sodium reduction strategies must remain at the top of the public health agenda. It is the shared responsibility of public health leaders, journalists, and government

officials to get the message right: reducing sodium intake saves lives.<sup>16</sup>

## DISCLOSURE

The authors declared no conflict of interest.

## REFERENCES

1. US Department of Agriculture, Agricultural Research Service. 2010. *Nutrient Intakes From Food. Mean Amounts Consumed per Individual, by Gender and Age. What We Eat in America, NHANES 2007–2008*. Updated 14 April 2011. [http://www.ars.usda.gov/SP2UserFiles/Place/12355000/pdf/0910/Table\\_1\\_NIN\\_GEN\\_09.pdf](http://www.ars.usda.gov/SP2UserFiles/Place/12355000/pdf/0910/Table_1_NIN_GEN_09.pdf).
2. Loria CM, Mussolino ME, Cogswell ME, Gillespie C, Gunn JP, Labarthe DR, Saydah S, Pavkov ME. Usual sodium intakes compared with current dietary guidelines—United States, 2005–2008. *MMWR Morb Mortal Wkly Rep* 2011; 60:1413–1417.
3. Dietary Guidelines Advisory Committee. *Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010, to the Secretary of Agriculture and the Secretary of Health and Human Services*. US Department of Agriculture, Agricultural Research Service: Washington, DC, 2010.
4. Stamler J, Stamler R, Neaton JD. Blood pressure, systolic and diastolic, and cardiovascular risks: US population data. *Arch Intern Med* 1993; 153:598–615.
5. Hoyert DL, Xu JQ. *Deaths: Preliminary Data for 2011. National Vital Statistics Reports*. Vol 61, No 6. National Center for Health Statistics: Hyattsville, MD, 2012.
6. Danaei G, Ding EL, Mozaffarian D, Taylor B, Rehm J, Murray CJ, Ezzati M. The preventable causes of death in the United States: comparative risk assessment of dietary, lifestyle, and metabolic risk factors. *PLoS Med* 2009; 6:e1000058.
7. Asaria P, Chisholm D, Mathers C, Ezzati M, Beaglehole R. Chronic disease prevention: health effects and financial costs of strategies to reduce salt intake and control tobacco use. *Lancet* 2007; 370:2044–2053.
8. Beaglehole R, Bonita R, Horton R, Adams C, Alleyne G, Asaria P, Baugh V, Bekedam H, Billo N, Casswell S, Cecchini M, Colagiuri R, Colagiuri S, Collins T, Ebrahim S, Engelgau M, Galea G, Gaziano T, Geneau R, Haines A, Hospedales J, Jha P, Keeling A, Leeder S, Lincoln P, McKee M, Mackay J, Magnusson R, Moodie R, Mwatsama M, Nishtar S, Norrving B, Patterson D, Piot P, Ralston J, Rani M, Reddy KS, Sassi F, Sheron N, Stuckler D, Suh I, Torode J, Varghese C, Watt J. Priority actions for the non-communicable disease crisis. *Lancet* 2011; 377:1438–1447.
9. Institute of Medicine. *Sodium Intake in Populations: Assessment of Evidence*. National Academies Press: Washington, DC, 2013.
10. Strom BL, Anderson CM, Ix JH. Sodium reduction in populations: insights from the Institute of Medicine Committee. *JAMA* 2013; 310:1–2.
11. World Health Organization. *Guideline: Sodium Intake for Adults and Children*. World Health Organization: Geneva, Switzerland, 2012.
12. Kolata G. No benefits seen in sharp limits on salt in diet. *New York Times* 14 May 2013. <http://www.nytimes.com/2013/05/15/health/panel-finds-no-benefit-in-sharply-restricting-sodium.html?pagewanted=all&r=0>.
13. Editorial Board. Doubts about restricting salt. *New York Times* 14 May 14 2013. <http://www.nytimes.com/2013/05/15/opinion/doubts-about-restricting-salt.html>.
14. Mattes RD, Donnelly D. Relative contributions of dietary sodium sources. *J Am Coll Nutr* 1991; 10:383–393.
15. Institute of Medicine. *Strategies to Reduce Sodium Intake in the United States*. National Academies Press: Washington, DC, 2010.
16. Bibbins-Domingo K, Chertow GM, Coxson PG, Moran A, Lightwood JM, Pletcher MJ, Goldman L. Projected effect of dietary salt reductions on future cardiovascular disease. *N Engl J Med* 2010; 362:590–599.