Reducing Sodium:
A Look at State Savings in Health Care Costs

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Introduction

The Scientific Report of the 2015 Dietary Guidelines Advisory Committee calls for Americans to reduce their sodium consumption. In doing so, it joins a more-than-40-year-long chorus of public health organizations and authoritative scientific bodies that have called for actions to reduce sodium intake to prevent strokes, heart attacks, and other diseases associated with excessive sodium in the diet.1,2,3,4,5,6

According to the government’s 2010 Dietary Guidelines for Americans, adults should consume no more than 2,300 milligrams (mg) of sodium per day. The Guidelines also recommended that people at greater risk of cardiovascular disease—those with hypertension, adults 51 years and older, and African Americans—should limit sodium to 1,500 mg per day.7 The latter group accounts for the majority of adults, according to the Centers for Disease Control and Prevention (CDC).8 In contrast to those recommendations, the 2011–2012 National Health and Nutrition Examination Survey (NHANES) shows that the average American consumes 3,478 mg of sodium per day.9

Exact sodium consumption is not known with great accuracy. Importantly, NHANES data underestimate actual sodium consumption because they do not include salt added in cooking and at the table, and survey participants tend to underreport the amount of food they consume.10 Reviews of generally small studies that used 24-hour urine analyses also found that adults in the U.S. consume about 3,500 mg per day.11 However, even those studies may underestimate sodium because some sodium is lost in sweat and feces and subjects do not adhere perfectly to collection protocols. Nevertheless, this report will err on the conservative side and assume that current average sodium consumption is 3,500 mg of sodium per day. Excess sodium consumption boosts blood pressure, and hypertension is a leading cause of cardiovascular disease, accounting for two-thirds of all strokes and half of all cases of heart disease.12

Sodium Intake for Last Quarter Century

As can be seen from Figures 1 and 2, NHANES monitoring has found that sodium intake since 1988 has been fairly constant and far too high. A quarter-century-old report found that almost 80 percent of the sodium in the average American’s diet comes from processed and restaurant foods,13 meaning that sodium intake is largely out of the consumer’s control. That figure is likely to be higher today.
Figure 1.

**AMERICANS' AVERAGE SODIUM CONSUMPTION (MG/DAY) BASED ON DIETARY-RECALL SURVEYS**

- Average Male and Female Consumption (ages 2 and older)
- 2010 Dietary Guidelines for Americans: recommended daily sodium intake limit for people over 50, people with hypertension, and African Americans (majority of adults)
- 2010 Dietary Guidelines for Americans: recommended daily sodium intake limit for other adults

![Graph showing sodium consumption over time.](image)

Figure 2.*

**SODIUM/CALORIE RATIOS, BASED ON DIETARY-RECALL SURVEYS**

(AVERAGE OF MALES AND FEMALES 2 YEARS AND OLDER)

- NHANES IV 1999–2000
- NHANES 2001–2002
- NHANES 2003–2004
- NHANES 2005–2006
- NHANES 2005–2008
- NHANES 2007–2008
- NHANES 2009–2010
- NHANES 2011–2012

*Figure 2 uses sodium-to-calorie ratios to show that sodium consumption has remained constant even when accounting for changes in caloric intake.*
Sodium Reduction: Saving Money and Lives

In 2010, the Institute of Medicine (IOM) called on the Food and Drug Administration (FDA) to reduce sodium by setting gradually decreasing mandatory limits on sodium in various categories of processed and restaurant foods. The IOM additionally called on the Secretary of Health and Human Services to convene and lead a nationwide campaign that would involve industry, public health groups, and consumer advocates to support the FDA initiative. The recent Scientific Report of the 2015 Dietary Guidelines Advisory Committee calls for the FDA to act on the Institute of Medicine’s 2010 recommendations, noting: “The FDA should expeditiously initiate a process to set mandatory national standards for the sodium content of foods.”

Researchers estimate that reducing current sodium consumption rates by 1,200 mg a day (such as from 3,500 to 2,300 mg per day) would prevent 60,000 to 120,000 cases of coronary heart disease and save 44,000 to 92,000 lives per year. Such a shift in sodium consumption is also estimated to reduce health care costs by $10 billion to $24 billion annually.

To date, studies have not estimated the savings in health care costs in individual states if sodium consumption is reduced from the current level of about 3,500 mg per day to the recommended 2,300 mg.

Methods

To determine the costs saved by sodium reduction on a state-by-state basis, we began with national estimates of health care costs saved as calculated by Bibbins-Domingo and her team at University of California, San Francisco. They determined that a 1,200 mg reduction in sodium would save $10 billion to $24 billion nationally per year, or an average of $17 billion. We used that average to determine the costs that would be saved by reducing sodium from 3,500 mg to 2,300 mg per day.

Next, we calculated the cost saved per person by dividing the national cost estimate of $17 billion by the 2009 national population of 306.9 million. We adjusted that cost estimate for inflation, giving a per capita cost saving of $61.12 from a 1,200 mg reduction in sodium. To determine the health care cost saved per state, we multiplied the per capita cost by the population of each U.S. state. Our figures are only rough estimates, because sodium intake presumably varies from state to state, and the vulnerability of a state’s population to develop hypertension varies depending on the state’s ethnic, gender, health, and age distributions. Our estimates do not take those variables into account.

Results

As shown in Figures 3 and 4, we estimate that a 1,200 mg per day sodium reduction would reduce annual health care costs in four states by more than $1 billion each, with the most savings being achieved in California at about $2.37 billion. In eight additional states the savings are estimated to be between $500 million and $1 billion annually. Even the state with the least estimated savings, Wyoming, totals about $36 million annually.
Figure 3.

Annual health care costs (in millions) saved with 1,200 mg reduction in sodium consumption
Figure 4.

ANNUAL HEALTH CARE COSTS (IN MILLIONS) SAVED WITH 1,200 MG REDUCTION IN SODIUM CONSUMPTION

- Alabama: $296
- Alaska: $45
- Arizona: $411
- Arkansas: $181
- California: $327
- Colorado: $220
- Connecticut: $57
- Delaware: $40
- District of Columbia: $1,216
- Florida: $617
- Georgia: $87
- Hawaii: $100
- Idaho: $403
- Illinois: $787
- Indiana: $190
- Iowa: $177
- Kansas: $270
- Kentucky: $284
- Louisiana: $81
- Maine: $365
- Massachusetts: $412
- Michigan: $606
- Minnesota: $334
- Mississippi: $183
- Missouri: $371
- Montana: $63
- Nebraska: $115
- Nevada: $174
- New Hampshire: $81
- New Jersey: $546
- New Mexico: $127
- New York: $1,207
- North Carolina: $608
- North Dakota: $45
- Ohio: $709
- Oklahoma: $237
- Oregon: $243
- Pennsylvania: $782
- Rhode Island: $64
- South Carolina: $295
- South Dakota: $52
- Tennessee: $400
- Texas: $1,648
- Utah: $180
- Vermont: $38
- Virginia: $509
- Washington: $432
- West Virginia: $113
- Wisconsin: $352
- Wyoming: $36
Discussion

As seen by even these rough cost estimates, the health care cost savings achievable at the state level through the recommended levels of sodium reduction are likely to be substantial. The importance of such savings is well documented. The Pew Charitable Trusts’ State Health Care Spending project, for instance, notes: "When it comes to health care spending, the bill just keeps getting bigger. Health care’s growing claim on state budgets is competing with other important priorities, including education, public safety, and transportation."  

These estimates also underline the importance of current efforts by public health authorities to obtain state-level sodium reduction. Several states and localities are seeking to achieve reductions in sodium intake with support from the federal Centers for Disease Control and Prevention (CDC). In 2013 and 2014, four states—Maine, New York, Oregon, and Washington—and six large municipalities—Los Angeles, Marion County (IN), New York City, Philadelphia, San Antonio, and San Diego—received awards under the Sodium Reduction in Communities Program (SCRP) to decrease sodium consumption in their populations. Working through the Association of State and Territorial Health Officials, CDC also provided support for technical assistance to seven states—Arkansas, California, Delaware, Indiana, Massachusetts, Montana, and North Carolina—between 2010 and 2013 to achieve sodium reduction through procurement policies.

For the state-level benefits to be fully realized, however, it will take a coordinated national effort led by the FDA. A national sodium reduction strategy will also require investment in monitoring and evaluation to measure progress and provide accountability, especially given the lack of state-level sodium intake data.

In the meantime, FDA’s failure to act is costing states hundreds of millions of health care dollars they can ill afford to lose.

References


15 Ibid.


18 Ibid.

19 Ibid.

20 Ibid.


