B3: Implementing effective strategies to reduce sodium in the food supply

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B. Proposed policy
1a. Title: Implementing effective strategies to reduce sodium in the food supply
1b. Keywords: sodium, hypertension, heart disease, stroke
1c. Overriding concern: decreasing high levels of sodium in the food supply to prevent hypertension and cardiovascular diseases

2. Relation of this policy statement to existing APHA policy. This proposed policy would replace and archive APHA policy 2002-4, Reducing sodium content in the American diet. Since that policy was adopted, additional scientific evidence and policy developments have necessitated this replacement.

C. Problem statement. Cardiovascular diseases are responsible for 31 percent of all deaths in the United States. Each year, more than 600,000 Americans die of heart disease and more than 135,000 die of stroke. Elevated blood pressure levels are a major cause of these diseases. The relationship between blood pressure levels and risk of developing cardiovascular diseases is strong, continuous, graded, consistent, independent, and etiologically significant.

Almost 60 percent of adults in the U.S. have blood pressure levels which are higher than normal (defined as < 120 mm Hg systolic and < 80 mm Hg diastolic), thereby putting them at significantly increased risk of developing these diseases. For example, the estimated 70 million persons with prehypertension (defined as 120-139 mm Hg systolic and/or 80-89 mm Hg diastolic) have a 1.5 to 2.5 times greater risk of having a heart attack, a stroke, or heart failure in 10 years than those with normal blood pressure levels. Every 20 mm Hg increase in systolic blood pressure above the level of 115/75 leads to a doubling of risk of death from coronary heart disease and stroke.
Hypertension, defined as a systolic blood pressure ≥ 140 mm Hg and/or a diastolic blood pressure ≥ 90 mm Hg, affects almost 75 million U.S. adults and presents the highest risk. In 2002, the number of hypertensives was 43 million. The prevalence of hypertension rises dramatically with increasing age; by age 80, more than 70 percent of the population is hypertensive. Blacks suffer from even higher rates of hypertension than whites, resulting in higher mortality rates from cardiovascular diseases in blacks compared to whites. The lifetime probability of developing hypertension in the United States is 90 percent. The lifetime probability of developing hypertension in the United States is 90 percent. Controlling high blood pressure either non-pharmacologically or pharmacologically reduces risk, yet less than 50 percent of hypertension is controlled in the U.S.

Hypertension is a largely preventable risk factor. The National Heart, Lung, and Blood Institute guidelines recommend five nutritional/lifestyle approaches to prevent hypertension: (1) reduction of sodium intake, (2) weight reduction in the overweight, (3) regular physical activity, (4) moderation of alcohol intake, and (5) an eating plan that is rich in fruits, vegetables, and low-fat dairy products and reduced in saturated fat, total fat and cholesterol. These same nutritional approaches are also highly effective in treating hypertension and can significantly reduce the amount or even need for medications. Because of the high prevalence of elevated blood pressure levels and the associated mortality and morbidity in the United States, effective public health interventions that will lead to population-wide reductions in blood pressure are urgently needed. Reduction in sodium intake represents the approach most readily amenable to a public health solution.

There is a clear relationship between habitual sodium intake and blood pressure levels. The large amount of evidence is sufficiently strong to warrant recommendations for the public to substantially reduce dietary sodium intake. The World Health Organization now characterizes the evidence linking excess sodium intake to cardiovascular diseases as “conclusive”. Others refer to the evidence linking excess sodium consumption to hypertension as “overwhelming” and state that excess sodium is the primary cause of hypertension.

A meta-analysis of 32 randomized clinical trials concluded that if a population decreased its sodium intake by 2,300 mg, this would lower mean blood pressure by 5.8 mm Hg systolic/2.5 mm Hg diastolic in hypertensives, and by 2.3 mm Hg systolic/1.4 mm Hg diastolic in nonhypertensives. A 5 mm Hg reduction in systolic blood pressure for the general U.S.
population would result in 14 percent fewer deaths from strokes, 9 percent fewer deaths from coronary heart disease, and 7 percent fewer deaths overall.\textsuperscript{14} Although a very small number of researchers have disputed the link between sodium intake and blood pressure,\textsuperscript{15} the primary opposition to lowering sodium in the food supply has come from the food and beverage industries. These industries have indicated that they feel that such reductions are not needed. Yet, randomized clinical trials have definitively demonstrated that reducing sodium intake decreases blood pressure in people with and without high blood pressure. For example, the Dietary Approaches to Stop Hypertension (DASH)-Sodium study showed that a diet of 1500 mg of sodium/day lowered blood pressure by 8.3/4.4 mm Hg in hypertensives and by 5.6/2.8 mm Hg in normotensives compared to the usual high-sodium American diet.\textsuperscript{16} Blood pressures declines both in those < 45 years of age and those 45 and older. The steepest decline in blood pressure occurred when participants went from consuming 2300 mg sodium/day to 1500 mg/day. This finding strongly suggests that a level of 1500 mg/day is safer than a level of 2300 mg/day.

Long-term follow-up of participants in two randomized clinical trials with a modest reduction in sodium intake found a 25 percent decrease in cardiovascular events in those originally randomized to a reduced sodium diet.\textsuperscript{17} Finally, a meta-analysis of trials in children showed that a reduced sodium intake also lowered blood pressure in infants and children.\textsuperscript{18} Higher sodium intake results in adverse effects beyond those of increasing blood pressure. An intake of sodium higher by 2300 mg per day is associated with a 61 percent increase in coronary heart disease mortality, an 89 percent increase in stroke mortality, and a 39 percent increase in all-cause mortality over a 19-year period among adults who are overweight after adjusting for blood pressure, age, BMI, and other important variables.\textsuperscript{19} Higher sodium consumption is also associated with an increased risk of developing urinary stones, osteoporosis, and gastric cancer.\textsuperscript{20-22} Excess sodium consumption has also been linked to overweight and obesity in both children and adults; the primary mechanism is increased fluid intake caused by the sodium load, much of it from either soda, juice, or alcohol.\textsuperscript{23-24} It has been estimated that the excess sodium in our food supply leads to an increase of 278 calories daily in children as a result of an additional seven billion cans of soda being consumed in the U.S. by children ages 4 to 18.\textsuperscript{23} All of these findings affirm the benefit of recommending that sodium be limited to 1500 mg per day.
The average American adult ingests roughly 3600 mg of sodium daily, after accounting for discretionary salt. This amount far exceeds current recommendations and physiologic need. The true amount of sodium intake may be even higher since current estimates are based on dietary recall, but more accurate biochemical assessments via 24 hour urine samples are not currently available for the population.

Between 75 and 80 percent of the daily sodium intake of the U.S. population comes from salt added to processed and restaurant foods, the remainder coming from salt added while cooking or at the table. Thus, in the U.S. and other western societies, a high dietary salt intake is due to a large portion of daily calories consisting of processed and restaurant foods. These foods frequently contain large amounts of sodium. For example, some processed foods and some restaurant meals contain more than 4000 mg of sodium. The exact amount across food processors or purveyors is not quantified or tracked in any existing surveillance system.

In 2002, APHA adopted a resolution recommending that sodium in processed and restaurant foods be reduced by 50 percent over the next 10 years. It has been estimated that such a change would result in a reduction of at least 150,000 premature deaths annually. In 2006, the American Medical Association adopted a policy recommending a minimum 50 percent reduction in sodium in processed and restaurant foods over the following ten years. The AMA policy also recommended that sodium no longer be designated as GRAS (generally recognized as safe) by the Food and Drug Administration. The rationale for this recommendation was that a substance that results in more than 400 premature deaths daily should not be categorized as safe. In fact, for a substance to be classified as GRAS, there must meet the "reasonable certainty of no harm" safety standard.

Removing GRAS status would trigger the FDA to regulate the amount of sodium in processed foods. Without a change in this status, the FDA is not likely to take action to regulate the sodium content of foods. The small, inadequate voluntary efforts by the food and restaurant industries have done little in response to these policies.

In 2010, the Institute of Medicine published a report which noted that the voluntary approach to sodium reduction by the food industry had been totally unsuccessful over the past 40 years. The IOM report recommended that the GRAS status of sodium be modified and that the FDA regulate the amount of sodium permitted in foods and progressively ratchet down the amount
permitted. To date, the FDA has not taken action on either the AMA’s or the IOM’s recommendations.

Many countries have been working actively for years to reduce sodium in their food supplies and are far ahead of the United States in their efforts. For example, Finland began a campaign to reduce the consumption of sodium that included both public education and regulation in the 1970s. Sodium intake has decreased more than 40 percent since then, resulting in a fall in mean diastolic blood pressure of greater than 10 mm Hg and a concomitant 80 percent decline in the mortality rate from heart disease and stroke.

In the United Kingdom, the Food Standards agency adopted guidelines in 2006 calling for a 33 percent reduction of sodium in processed foods over a five-year period. Separate guidelines were created for 85 different categories of processed foods. Most processed foods now carry front-of-package labels with color identifiers for foods high (red), medium (yellow), or low in sodium (green). Seeking to avoid a red label, many manufacturers reduced the level of sodium in their products.

In 2010, the American Heart Association (AHA) recommended that all Americans consume no more than 1500 mg of sodium/day. The AHA subsequently issued a call to action for population-wide sodium reduction, providing the scientific evidence and rationale for the 1500 mg target for all Americans. In 2010, the U.S. Dietary Guidelines Advisory Committee unanimously recommended that all Americans consume no more than 1500 mg/day. The Committee provided extensive evidence supporting their recommendation. However, the USDA and US DHHS instead recommended in the 2010 Dietary Guidelines that only persons who are either hypertensive, diabetic, black, > 51 years of age, or have chronic kidney disease consume no more than 1500 mg daily. For the rest of the population, they recommended that persons consume less than 2300 mg daily. Yet even young adults are now developing hypertension; a 2011 report of a large representative sample of U.S. adults aged 24 to 32 found an alarming 19 percent were hypertensive, much higher than previously found in NHANES. The CDC has noted that roughly 70 percent of adults fall into the category for which the Dietary Guidelines recommended no more than 1500 mg daily. Reducing the recommended level for the entire population to no more than 1500 mg daily represents a prudent public health measure that would substantially reduce the mean blood pressure of the U.S. population.
normal sodium balance with as little as 115 mg of dietary sodium per day. Animal randomized controlled trials, observational studies, and randomized clinical trials have found no long-term adverse effects associated with habitual sodium intake $\leq 1500$ mg per day. A reduction to no more than 1500 mg daily necessitates greater reduction of sodium in processed and restaurant foods than recommended in APHA policy 2002-4. It would also lead to an even greater reduction in premature mortality and morbidity than APHA’s previous policy would have.

Healthy People 2010 established an objective to increase the proportion of the population who consumed less than 2400 mg per day from 21 percent to 65 percent by the year 2010. Based on data from NHANES 2005-2005, the U.S. did not come close to meeting that objective. Only 18.8 percent were consuming less than 2300 mg daily, while only 5.5 percent met their recommended target of no more than 1500 mg daily.

RAND published an analysis in 2009 indicating that an average intake of 1500 mg of sodium daily would lead to health care cost savings in the United States of 26.2 billion dollars annually. It would also lead to huge decreases in morbidity and mortality from heart disease and stroke.

Gradually reducing the amount of sodium added in the manufacturing and commercial preparation of food is a prudent and safe public health intervention, and the single most effective means of reducing the sodium intake of Americans. A 2010 analysis estimated that regulatory action would result in 20 times greater health benefits than voluntary action. There is an urgent need for rapid, effective actions by the food industry and by the FDA. Such actions are long overdue. Without a decrease of at least 75 percent in the sodium content of processed and restaurant foods, it will be exceedingly difficult, if not impossible, for most Americans to consume no more than 1500 mg sodium daily.

**Proposed recommendations**

Based on the strong scientific data now available, APHA recommends that a uniform upper level for sodium consumption be advised to the American public and that immediate steps be taken to protect the public from the harmful effects of mass exposure to the high levels of sodium currently present in our food supply. Such steps should be taken by both the food and restaurant industries and by federal and state governmental agencies. These steps would create an environment that would greatly facilitate dietary sodium reduction by the American public and would substantially improve the cardiovascular health of the American public.

**Action steps**
Therefore the American Public Health Association:

• urges the Food and Drug Administration within one year 1) to either remove or modify the GRAS status of sodium, 2) to begin regulating the amount of sodium permitted in processed foods, and 3) to establish a schedule for the progressive lowering of sodium in food products over the next ten years consistent with this policy resolution

• urges the Food and Drug Administration to require easily understandable front-of-package labels that identify whether products are high, medium, or low in sodium content

• urges the FDA to require that 2300 mg be used as the standard for the food industry to use for calculating the DV placed on processed food

• urges FDA to set the standard for DV for processed foods at 1500 mg by 2017

• urges the food and restaurant industries to take immediate steps to reduce and to identify the amount of sodium on a voluntary basis prior to FDA regulations being formulated

• urges the USDA to require that all of its food programs comply with standards set forth in the 2010 dietary guidelines and this policy resolution

• urges collaboration among the Centers for Disease Control and Prevention, state and local health departments, the American Heart Association and other professional organizations, food manufacturers, supermarkets, and the restaurant industry in educating consumers to choose lower sodium foods, especially fresh fruits and vegetables

• urges that partnerships be formed with the FDA and the Centers for Disease Control and Prevention and other organizations to work with food manufacturers and preparers to meet a goal of reducing the sodium content of processed and restaurant foods by 75 percent within the next 10 years

• urges state and local health departments to establish sodium standards in their food procurement consistent with the sodium recommendations in this resolution

• urges the Centers for Disease Control and Prevention to broaden surveillance of sodium intake to include biomarkers (e.g., 24 hour urine specimens) as part of NHANES

• urges that government and private sponsored research funds be offered to identify simple, reliable measures to track the population’s sodium intake

• urges the Centers for Disease Control and Prevention to adopt a surveillance system for the levels of sodium in processed and restaurant foods
• urges the federal government to include sodium reduction in its childhood obesity prevention initiatives
• urges collaboration among U.S. public health agencies and public health agencies in other countries such as the United Kingdom, Canada, Australia, and Ireland which have already made progress on reducing sodium in their food supplies.
• urges that the Centers for Disease Control and Prevention, state and local health departments, and other organizations make hypertension prevention and control a high priority throughout the United States so that the Healthy People 2020 objectives for improving control of high blood pressure, reducing sodium consumption, and reducing mortality from heart disease and stroke can be met
• urges all Americans with the assistance of lower sodium in processed and restaurant foods based on the above actions to seek to reduce their sodium intake to no more than 1500 mg daily.

F. References.


