

It's Time to End the War on Salt (printed in Scientific American Magazine)

The zealous drive by politicians to limit our salt intake has little basis in science

By Melinda Wenner Moyer | July 8, 2011 | 107



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For decades, policy makers have tried and failed to get Americans to eat less salt. In April 2010 the Institute of Medicine urged the U.S. Food and Drug Administration to regulate the amount of salt that food manufacturers put into products; New York City Mayor Michael Bloomberg has already convinced 16 companies to do so voluntarily. But if the U.S. does conquer salt, what will we gain? Bland french fries, for sure. But a healthy nation? Not necessarily.

This week a meta-analysis of seven studies involving a total of 6,250 subjects in the *American Journal of Hypertension* found no strong evidence that cutting salt intake reduces the risk for heart attacks, strokes or death in people with normal or high blood pressure. In May European researchers publishing in the *Journal of the American Medical Association* reported that the less sodium that study subjects excreted in their urine—an excellent measure of prior consumption—the *greater* their risk was of dying from [heart disease](#). These findings call into question the common wisdom that excess salt is bad for you, but the evidence linking salt to heart disease has always been tenuous.

Fears over salt first surfaced more than a century ago. In 1904 French doctors reported that six of their subjects who had high blood pressure—a known risk factor for heart disease—were salt fiends. Worries escalated in the 1970s when Brookhaven National Laboratory's Lewis Dahl claimed that he had "unequivocal" evidence that salt causes hypertension: he induced high blood pressure in rats by feeding them the human equivalent of 500

grams of sodium a day. (Today the average American consumes 3.4 grams of sodium, or 8.5 grams of salt, a day.)

Dahl also discovered population trends that continue to be cited as strong evidence of a link between salt intake and high blood pressure. People living in countries with a high salt consumption—such as Japan—also tend to have high blood pressure and more strokes. But as a paper pointed out several years later in the *American Journal of Hypertension*, scientists had little luck finding such associations when they compared sodium intakes *within* populations, which suggested that [genetics](#) or other cultural factors might be the culprit. Nevertheless, in 1977 the U.S. Senate's Select Committee on Nutrition and Human Needs released a report recommending that Americans cut their salt intake by 50 to 85 percent, based largely on Dahl's work.

Scientific tools have become much more precise since then, but the correlation between salt intake and poor health has remained tenuous. Intersalt, a large study published in 1988, compared sodium intake with blood pressure in subjects from 52 international research centers and found no relationship between sodium intake and the prevalence of hypertension. In fact, the population that ate the most salt, about 14 grams a day, had a lower median blood pressure than the population that ate the least, about 7.2 grams a day. In 2004 the Cochrane Collaboration, an international, independent, not-for-profit health care research organization funded in part by the U.S. Department of Health and Human Services, published a review of 11 salt-reduction trials. Over the long-term, low-salt diets, compared to normal diets, decreased systolic blood pressure (the top number in the blood pressure ratio) in healthy people by 1.1 millimeters of mercury (mmHg) and diastolic blood pressure (the bottom number) by 0.6 mmHg. That is like going from 120/80 to 119/79. The review concluded that "intensive interventions, unsuited to primary care or population prevention programs, provide only minimal reductions in blood pressure during long-term trials." A 2003 Cochrane review of 57 shorter-term trials similarly concluded that "there is little evidence for long-term benefit from reducing salt intake."

Studies that have explored the direct relationship between salt and [heart disease](#) have not fared much better. Among them, a 2006 *American Journal of Medicine* study compared the reported daily sodium intakes of 78 million Americans to their risk of dying from heart disease over the course of 14 years. It found that the more sodium people ate, the less likely they were to die from heart disease. And a 2007 study published in the *European Journal of Epidemiology* followed 1,500 older people for five years and found no association between urinary sodium levels and the risk of coronary vascular disease or death. For every study that suggests that salt is unhealthy, another does not.

Part of the problem is that individuals vary in how they respond to salt. "It's tough to nail these associations," admits Lawrence Appel, an epidemiologist at Johns Hopkins University and the chair of the salt committee for the 2010 *Dietary Guidelines for Americans*. One oft-cited 1987 study published in the *Journal of Chronic Diseases* reported that the number of people who experience drops in blood pressure after eating high-salt diets almost equals the number who experience blood pressure spikes; many stay exactly the same. That is because "the human kidney is made, by design, to vary the accretion of salt based on the amount you take in," explains Michael Alderman, an epidemiologist at the Albert Einstein College of Medicine and former president of the International Society of Hypertension.

Some physicians argue that although tiny blood pressure drops will not have a big effect on individuals—they will not really affect your risk of having a heart attack—they may end up saving lives at the population level, in part because a small percentage of the population, including some African-Americans and elderly individuals, seem to be hypersensitive to salt. For instance, a study published in February 2010 in the *New England Journal of Medicine* estimated that cutting salt intake by about 35 percent would save at least 44,000 American lives per year. But such estimates are not evidence, either; they are conjecture. And low-salt diets could have side effects: when salt intake is cut, the body responds by releasing renin and aldosterone, an enzyme and a hormone, respectively, that increase blood pressure.

Rather than create drastic salt policies based on conflicting data, Alderman and his colleague Hillel Cohen propose that the government sponsor a large, controlled clinical trial to see what happens to people who follow low-salt diets over time. Appel responds that such a trial "cannot and will not be done," in part because it would be so expensive. But unless we have clear data, evangelical antisalt campaigns are not just based on shaky science; they are ultimately unfair. "A great number of promises are being made to the public with regard to this enormous benefit and lives saved," Cohen says. But it is "based on wild extrapolations."