# Sodium and Cardiovascular Disease

**Pamela A. Popper, President**
**Wellness Forum Health**

The prevailing thought remains that extreme sodium restriction is an important strategy for reducing the risk of cardiovascular disease and events like heart attack, stroke, and death. But many studies do not support extreme sodium restriction, and many show that doing so may increase, rather than decrease the risk of events and death.

Researchers conducting The Heart Failure Adherence and Retention Trial enrolled 902 patients with heart failure and who had symptoms, and then followed them for an average of 6 months. Data analysis showed that patients who restricted sodium to 2500 mg per day or less had a significantly higher risk of death or hospitalization for heart failure than patients who consumed more sodium. Those at highest risk were patients who were not taking an angiotensin-converting enzyme inhibitor or angiotensin receptor blocker.[1] This may mean that sodium restriction, to the extent that it is warranted in some cases, may be appropriate when made to patients with very specific circumstances, as opposed to recommending it to everyone.

Other studies have shown other potentially negative consequences of generalized salt restriction. For example, low-salt diets can increase insulin resistance in healthy people.[2]

One of the reasons that this issue should be considered more carefully is that the logistics of converting the world's population to low-sodium eating are daunting. Globally, most people are consuming between 3.0 and 6.0 grams of salt per day,[3] considerably higher than the 1.5 to 2.4 grams per day recommended by most health authorities. While the "common wisdom" is that salt restriction for all is a good idea, not one randomized trial has been conducted to show that reducing salt results in reduction of cardiovascular events and death. Instead, the medical community has relied on prospective cohort studies, which have shown inconsistent relationships between sodium intake and cardiovascular disease and death.

Furthermore, the relationship between sodium and potassium is generally ignored when looking at the connection between sodium and health outcomes. The average person living in a Westernized country consumes more sodium and considerably less potassium-rich fruits and vegetables, which means the typical ratio of sodium to potassium has been reversed. Low potassium intake increases the potential negative effects of high sodium intake, making it difficult to tell if health issues, including CVD, develop as a result of low potassium intake, high sodium intake, or both.[4]

A 2014 review determined that the sodium-to-potassium ratio is more strongly associated with blood pressure and CVD outcomes than either sodium or potassium alone in hypertensive patients. There should be more research in this area. But one of

the reasons why there has not been more research is that the investigators involved in the DASH diet study reported that their results effectively ended the debate about sodium restriction for lowering blood pressure.[5]

So today, health authorities advise that everyone, including healthy people, MUST practice extreme salt restriction. This advice is an example of the many ways in which bad advice is often offered, albeit with good intentions. The tendency for reductionism leads doctors to look for simple solutions to complex problems. In this case, taking to patients about reducing salt intake is much easier than helping patients to examine and potentially change their overall dietary pattern, including the ratio of sodium to other nutrients in the diet. And one-size-fits-all advice, with no consideration of the individual, is becoming increasingly prevalent. Some people should restrict sodium, some people should not touch alcohol, celiac patients should not eat gluten, and those allergic to peanuts should not include them in the diet. But it's easier to make blanket recommendations to everyone than it is to use clinical judgment in advising patients about health issues.

Current approaches stand in the way of better health for many. Restricting salt while eating an otherwise terrible diet does not result in health improvement. Piling on dietary restrictions for people who do not need them often stops people from trying to change their habits at all or sustaining the changes made in the long term. While there is a lot of chatter about "personalized medicine," very little of what we do in healthcare is personalized at all.

---

[1] Doukky R, Avery E, Mangla A et al. "Impact of Dietary Sodium Restriction on Heart Failure Outcomes." *JACC* 2016 Jan;4(1) DOI:10.1016/jchf.2015.08.007

[2] Garg R, Williams G, Hurwitz S, Brown N, Hopkins P, Adler G. "Low-salt diet increases insulin resistance in healthy subjects." *Metabolism* 2011 Jul;60(7):965-968

[3] Brown I, Tzoulaki I, Candeias V, Elliott P. "Salt intakes around the world: implications for public health." *Int J Epidemiol* 2009;38:791-813

[4] Morris R, Schmidlin O, Frassetto L, Sebastian A. "Relationship and interaction between sodium and potassium." *J Am Coll Nutr* 2006 Jun;25(3 Suppl):262S-270S

[5] Perez V, Chang E. "Sodium-to-Potassium Ratio and Blood Pressure, Hypertension and Related Factors." *Adv Nutr* 2014 November;5:712-741