Salt intake and hypertension

First Step Weight Management Clinic

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Estimated minimal replacement amount

- Humans have the capacity to survive at extremes of sodium intake from <200 mg (10 mmol)/day of sodium in the Yanomami Indians of Brazil to >10,300 mg (450 mmol)/day in Northern Japan
- In a steady state, the minimal amount of sodium required to replace losses is estimated to be 180 mg (8 mmol)/day [3].

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Recommended limit

- Based upon data from the National Health and Nutrition Examination Survey study, **the estimated average sodium intake in the United States is approximately 3600 mg/day**, which exceeds the **recommended upper limit of 2300 mg/day** set by the 2015 United States Dietary Guidelines

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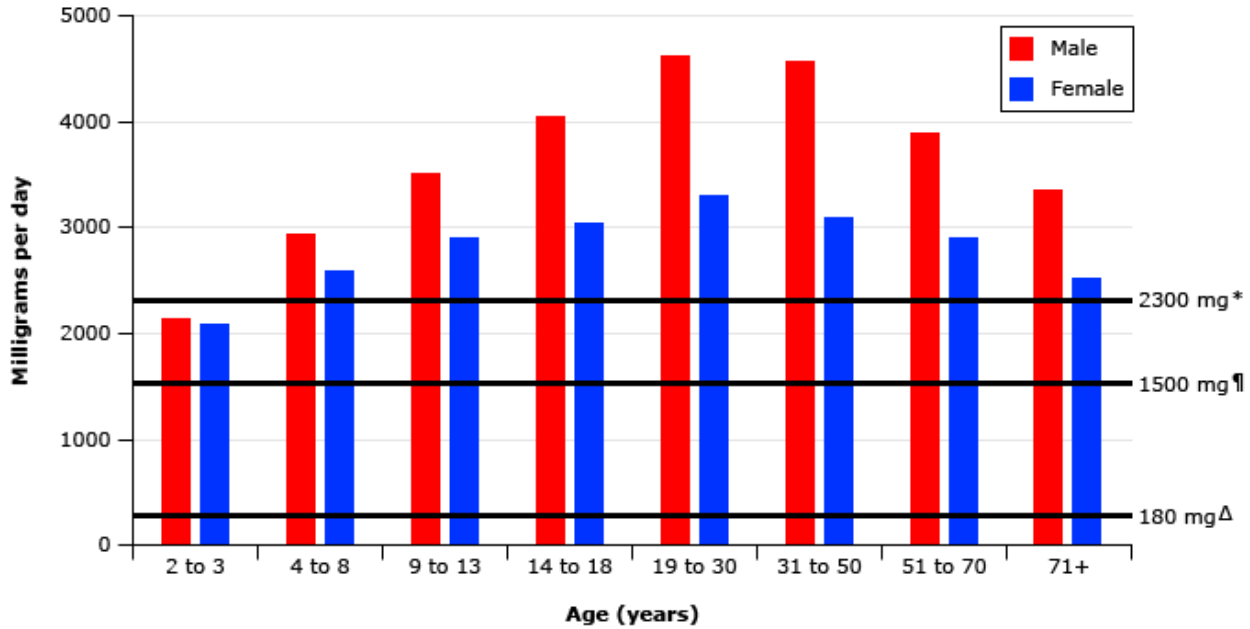
Mean sodium intake (mg per day) in the United States, by age group and sex: NHANES data 2011-2012



NHANES: National Health and Nutrition Examination Survey.

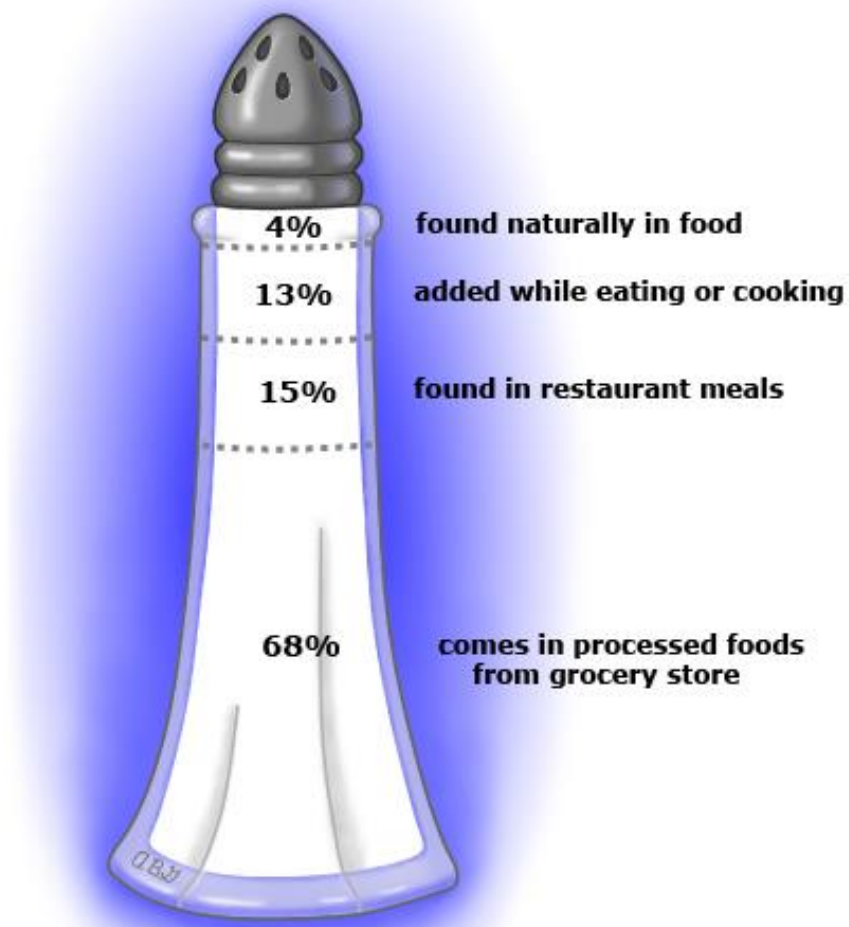
* Recommended upper limit of intake for adults.

¶ Recommended intake for Black Americans, hypertensives, and middle- and older-aged adults.

Δ Minimum physiologic need

Data from: U.S. Department of Agriculture, Agricultural Research Service. 2014. Nutrient Intakes from Food and Beverages: Mean Amounts Consumed per Individual, by Gender and Age, What We Eat in America, NHANES 2011-2012. Available at: https://www.ars.usda.gov/ARSUserFiles/80400530/pdf/1112/Table_1_NIN_GEN_11.pdf (Accessed on March 14, 2018).

Original data from: He FJ, MacGregor GA. Reducing population salt intake worldwide: from evidence to implementation. Prog Cardiovasc Dis 2010; 52:363.



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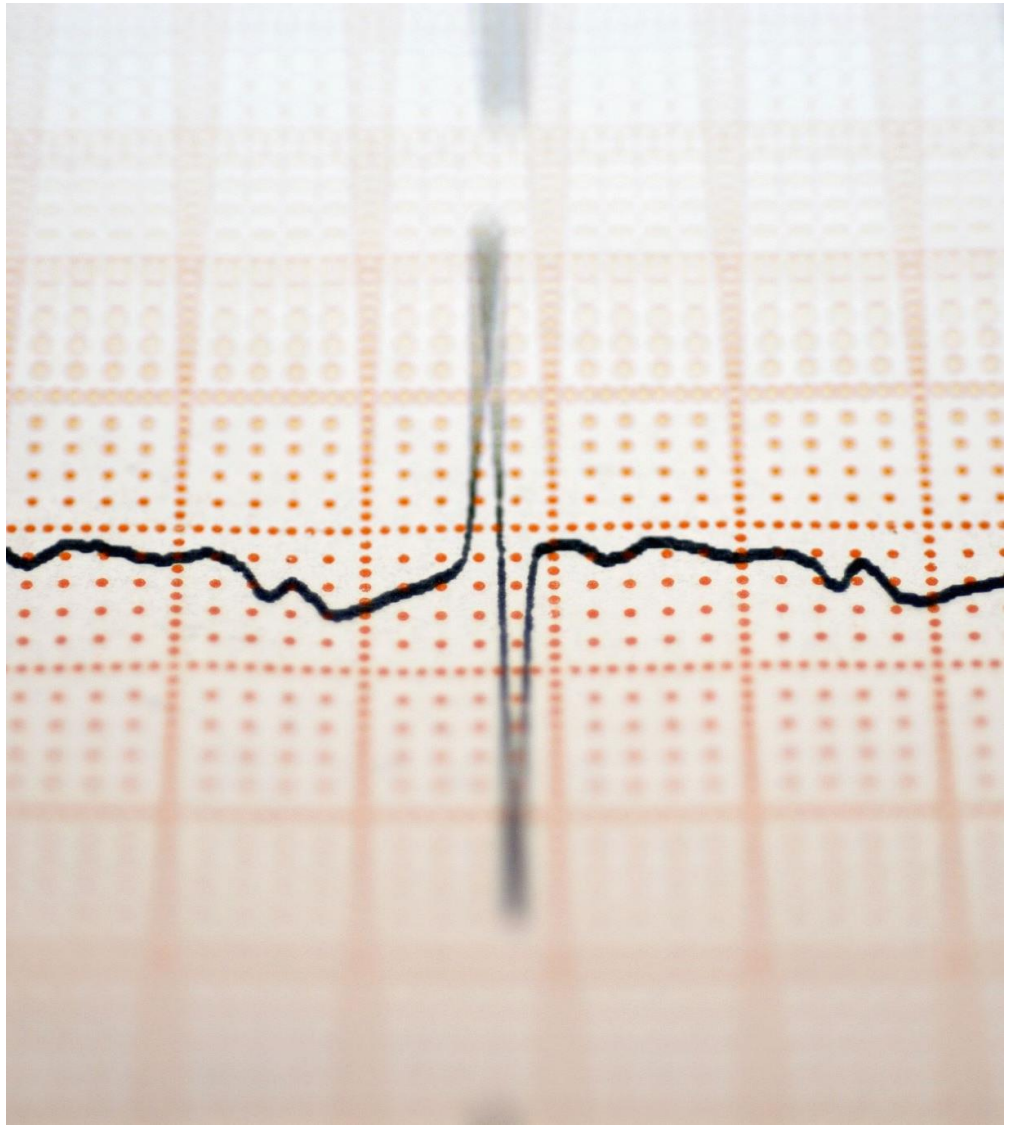
Effects of sodium on cardiovascular disease

Several studies have estimated the **public health benefits** and **cost savings** attributable to the BP effects of a reduced sodium intake.

In one study, reduction of dietary salt intake by 3 g/day was projected to save 194,000 to 392,000 quality-adjusted life-years and substantially reduce health care costs, while **reducing the annual number of deaths by 44,000 to 92,000**



Other adverse effects of excess sodium

- Higher sodium intake with higher left ventricular mass [2].
- Sodium reduction improves vascular structure and function
- Excess sodium intake appears to increase the risk of gastric cancer, proteinuria, kidney stones, and osteoporosis. As sodium intake increases, so does calciuria.
- Increased sodium intake raises the risk of headaches
- Some evidence has also linked excess sodium intake with altered immunity and the occurrence of autoimmune diseases, such as multiple sclerosis

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Mean BP reductions from sodium reduction in African Americans and non-African Americans with prehypertension and hypertension and in patients with medication-resistant hypertension

	African American: Prehypertension	Non-African American: Prehypertension	African American: Hypertension	Non-African American: Hypertension	Resistant hypertension
SBP reduction (mmHg)	−6.9	−4.0	−9.4	−6.8	−22.7
DBP reduction (mmHg)	−4.0	−1.4	−5.2	−3.3	−9.1
Mg of sodium reduction	−1800	−1800	−1800	−1800	−2300

Results are from two controlled feeding trials.

BP: blood pressure; SBP: systolic blood pressure; DBP: diastolic blood pressure.

Data from:

1. *Bray GA, Vollmer WM, Sacks FM, et al. A further subgroup analysis of the effects of the DASH diet and three dietary sodium levels on blood pressure: Results of the DASH-Sodium Trial. Am J Cardiol 2004; 94:222.*
2. *Pimenta E, Gaddam KK, Oparil S, et al. Effects of dietary sodium reduction on blood pressure in subjects with resistant hypertension: Results from a randomized trial. Hypertension 2009; 54:475.*

Ways to cut sodium

- Ask for the sodium content of dishes if it's available. Request that your food be prepared without added salt, MSG or salt-containing seasonings.
- Limit or skip sauces and condiments, which tend to be high in salt, or ask for them on the side.
- Look for words that indicate high sodium: smoked, cured, pickled, soy sauce and broth.
- Choose fruits and vegetables as sides instead of salty snack foods like chips or fries.

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Salt substitutes

- Salt substitutes, in which a proportion of sodium chloride is replaced with potassium chloride, have been studied to assess the effects of sodium reduction on cardiovascular outcomes.
- In a meta-analysis of five randomized trials with 24,306 participants, salt substitutes **reduced the relative risk of all-cause mortality by 11 percent, cardiovascular mortality by 13 percent, and cardiovascular events by 11 percent**

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DASH Diet Plan

- DASH stands for Dietary Approaches to Stop Hypertension. This eating plan was designed to lower the risk of hypertension (high blood pressure).

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DASH Diet

- If you follow the DASH diet, you'll eat plenty of:
- Fruits.
- Vegetables.
- Whole grains.
- Nuts, seeds and legumes.
- Low-fat dairy.

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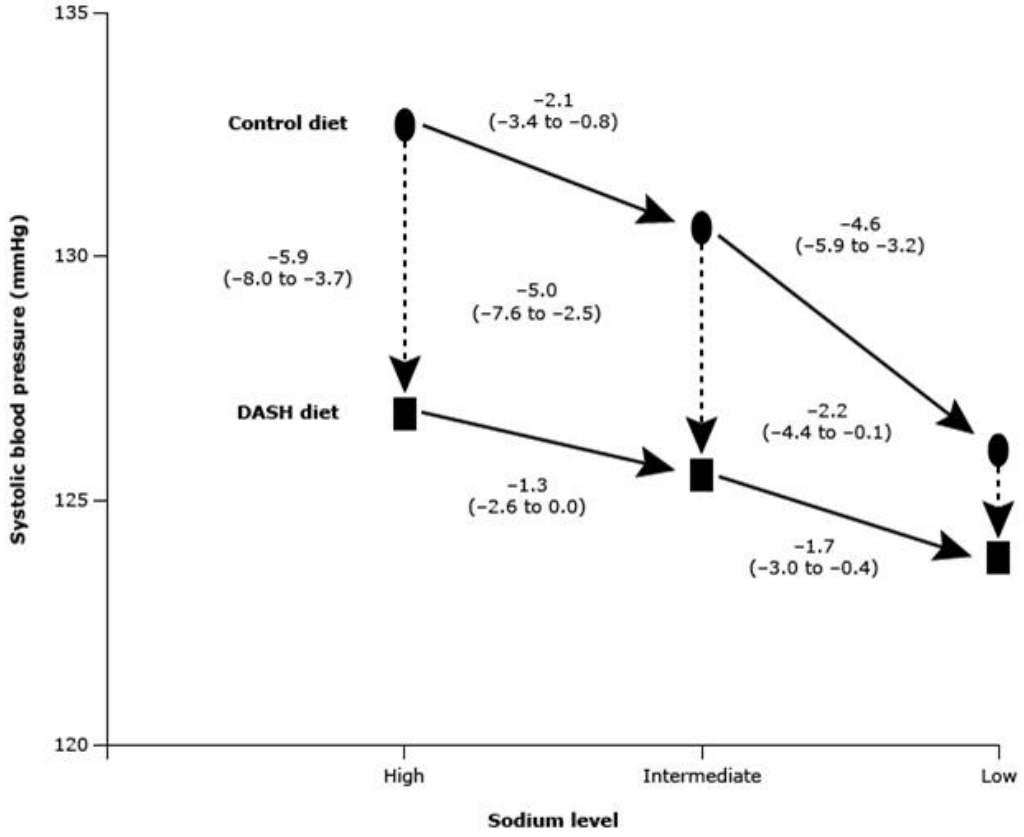
Average BP and BP reduction by level of dietary sodium in 2 diets (Control and DASH diets): Results from the DASH-Sodium Trial



BP: blood pressure; DASH: Dietary Approaches to Stop Hypertension.

From: Sacks FM, Svetkey LP, Vollmer WM, et al. Effects on blood pressure of reduced dietary sodium and the Dietary Approaches to Stop Hypertension (DASH) diet. DASH-Sodium Collaborative Research Group. N Engl J Med 2001; 344:3. Copyright © 2001 Massachusetts Medical Society. Reprinted with permission from Massachusetts Medical Society.

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Bananas, ripe and slightly ripe, raw

Data Type: Foundation **Food Category:** Fruits and Fruit Juices **FDC ID:** 1105314 **NDB Number:** 9040
FDC Published: 4/1/2020

Components | Individual Samples | Measures | Other Information

Portion: 100g

Name	Average Amount	Unit	Deriv. By	n	Samples	Min	Max	Median	Footnote	Initial Year Acquired
Proximates:										
Water	75.3	g	Analytical	12	Samples	72.2	77	75.3		2019
Energy (Atwater General Factors)	98	kcal	Calculated							
Energy (Atwater Specific Factors)	88	kcal	Calculated							
Nitrogen	0.12	g	Analytical	12	Samples	0.11	0.13	0.12		2019
Protein	0.74	g	Calculated			0.69	0.81	0.75		

Citric acid	341	mg	Analytical	8	Samples	302	377	343	2019
Malic acid	369	mg	Analytical	8	Samples	317	429	374	2019
Minerals:									
Calcium, Ca	5	mg	Analytical	6	Samples	4	6	4	2019
Iron, Fe	<0.4	mg	Analytical	6	Samples				2019
Magnesium, Mg	28	mg	Analytical	6	Samples	26.9	31.9	27.4	2019
Phosphorus, P	22	mg	Analytical	6	Samples	20	24	22	2019
Potassium, K	326	mg	Analytical	6	Samples	300	355	326	2019
Sodium, Na	<4	mg	Analytical	6	Samples				2019
Zinc, Zn	0.16	mg	Analytical	6	Samples	0.15	0.19	0.16	2019
Copper, Cu	0.101	mg	Analytical	6	Samples	0.083	0.128	0.097	2019
Manganese, Mn	0.258	mg	Analytical	6	Samples	0.093	0.47	0.262	2019
Iodine, I	<10	µg	Analytical	6	Samples				2019
Selenium, Se	<2.5	µg	Analytical	6	Samples				2019
Vitamins and Other Components:									
Vitamin C, total ascorbic acid	12.3	mg	Analytical	12	Samples	9.2	15.1	12.6	2019
Thiamin	0.056	mg	Analytical	12	Samples	0.044	0.068	0.057	2019
Riboflavin	<0.1	mg	Analytical	12	Samples				2019
Niacin	0.662	mg	Analytical	12	Samples	0.59	0.78	0.66	2019
Vitamin B-6	0.209	mg	Analytical	12	Samples	0.192	0.229	0.207	2019