CARDI·OH

Ohio Cardiovascular Health Collaborative

SCHOOL OF MEDICINE
CASE WESTERN RESERVE UNIVERSITY

In partnership with:

THE OHIO STATE UNIVERSITY WEXNER MEDICAL CENTER

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OHIO UNIVERSITY Heritage College of Osteopathic Medicine

Northeast Ohio MEDICAL UNIVERSITY

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Ohio Department of Medicaid

Project ECHO®

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Cardi-OH ECHO Reducing the Burden of Hypertension

Thursday, February 13, 2020

Disclosure Statements

The following planners, speakers, moderators, and/or panelists of the CME activity have financial relationships with commercial interests to disclose:

- Adam T. Perzynski, PhD reports being co-founder of Global Health Metrics LLC, a Cleveland-based software company and royalty agreements for forthcoming books with Springer publishing and Taylor Francis publishing.
- Brian Bachelder, MD received funds for his role as Physician Advisor at VaxCare.
- SiranM. Koroukian, PhD received grant funds for her role as a subcontractor on a study funded by Celgene.
- Christopher A. Taylor, PhD, RDN, LD, FAND reports grant funding and travel support for his role as a consultant, researcher, and presenter for Abbott Nutrition, and is also a member of the Scientific Advisory Council of Viocare, Inc.
- Jackson T. Wright, Jr., MD, PhD reports research support from the NIH and Ohio Department of Medicaid and consulting with NIH, AHA, and ACC.
- These financial relationships are outside the presented work.

All other planners, speakers, moderators, and/or panelists of the CME activity have no financial relationships with commercial interests to disclose.

Overview of salt restriction

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Case Western Reserve University

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Professor of Medical Dietetics

Professor of Family Medicine

The Ohio State University

Objectives

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- Explain the role of salt intake in controlling blood pressure.
- Describe the epidemiology of excessive salt intake across the American population.
- Describe a strategy to promote reduced salt consumption among patients with hypertension.


SALT
130 X

Factors Associated with Increased Salt Sensitivity

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- Fixed factors
  - Middle and older-aged persons
  - African-Americans
  - Genetic Factors
  - Individuals with:
    - Hypertension
    - Diabetes
    - Chronic Renal Insufficiency
- Modifiable
  - Low potassium intake
  - Poor quality diet

DASH-Sodium Trial

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- Design: randomized feeding trial
- Participants: 412 adults, ages 20+, with systolic BP 120-159 and diastolic BP 80-95 mmHg, not on medication
- Randomized groups:
  - Two diets (DASH and Control diets)
  - Three sodium levels (142, 105, 67)
- Outcomes: BP at end of one month

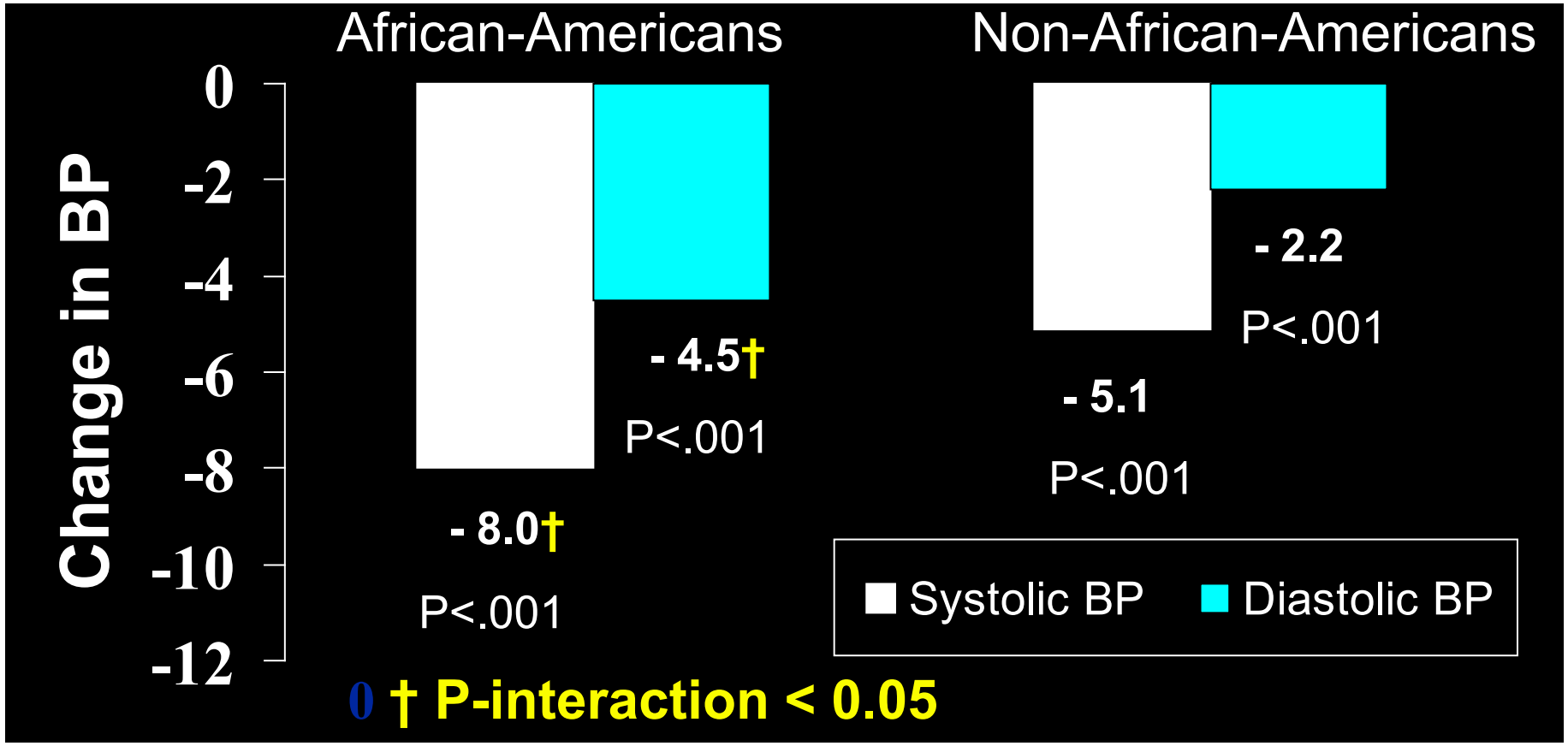
Sacks FM et al. NEJM 2001;344:3-10

Achieved Sodium Levels

Sacks FM et al. NEJM 2001;344:3-10

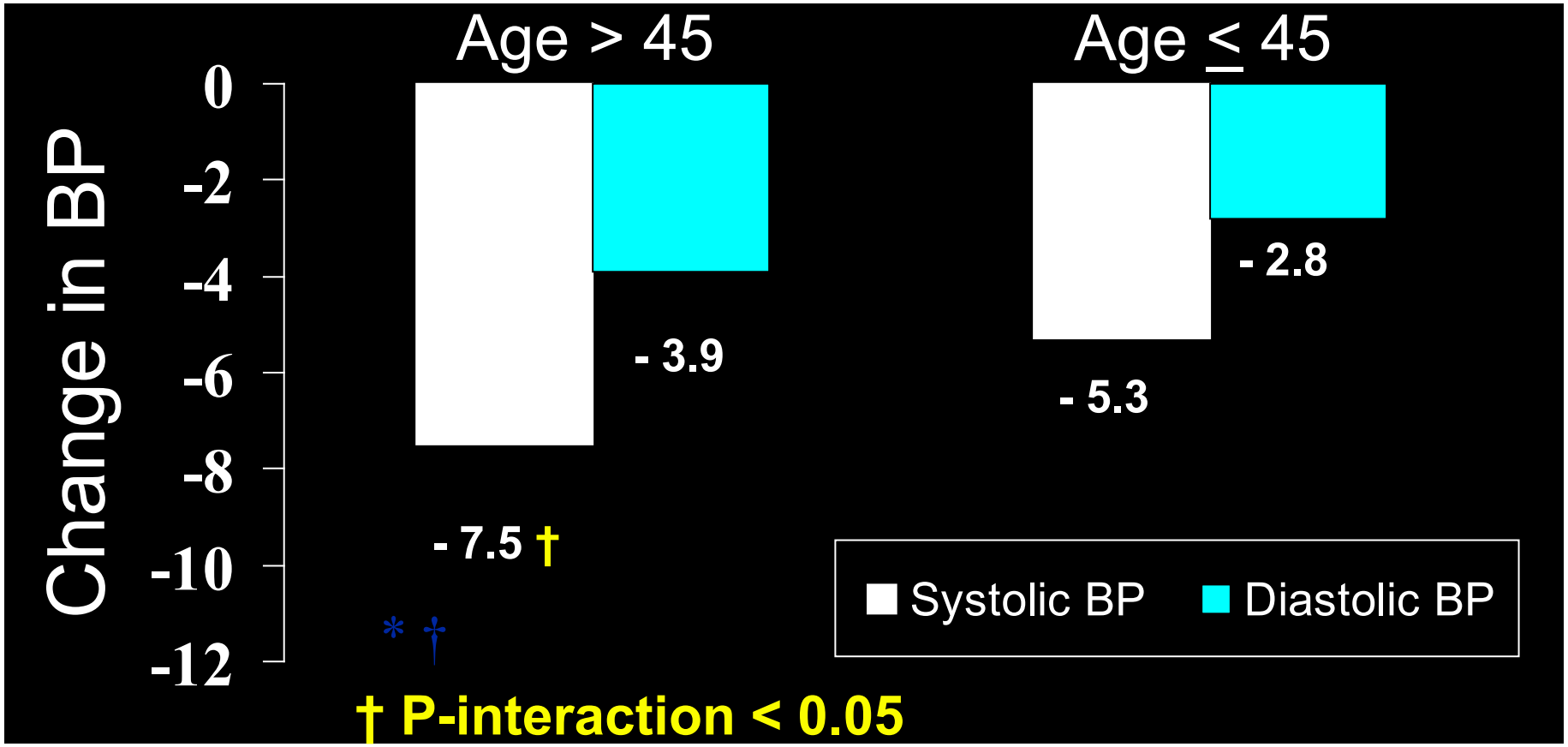
- "Higher": 143 mmol/d (3.3 g)
  - Similar to average U.S. intake
- "Intermediate": 106 mmol/d (2.4 g)
  - Upper limit of traditional guidelines for hypertension prevention and treatment
- "Lower": 65 mmol/d (1.5 g)
  - Possible optimal level

Effect of Salt Reduction (Higher to Lower) in African-Americans and Non-African-Americans on the Control Diet



Sacks FM et al. NEJM 2001;344:3-10

Effect of Sodium Reduction (Higher to Lower Level) on the Control Diet by Age Group (> 45 and ≤ 45)



Sacks FM et al. NEJM 2001;344:3-10

Phase 2 of the Trials of Hypertension Prevention (TOHP2)

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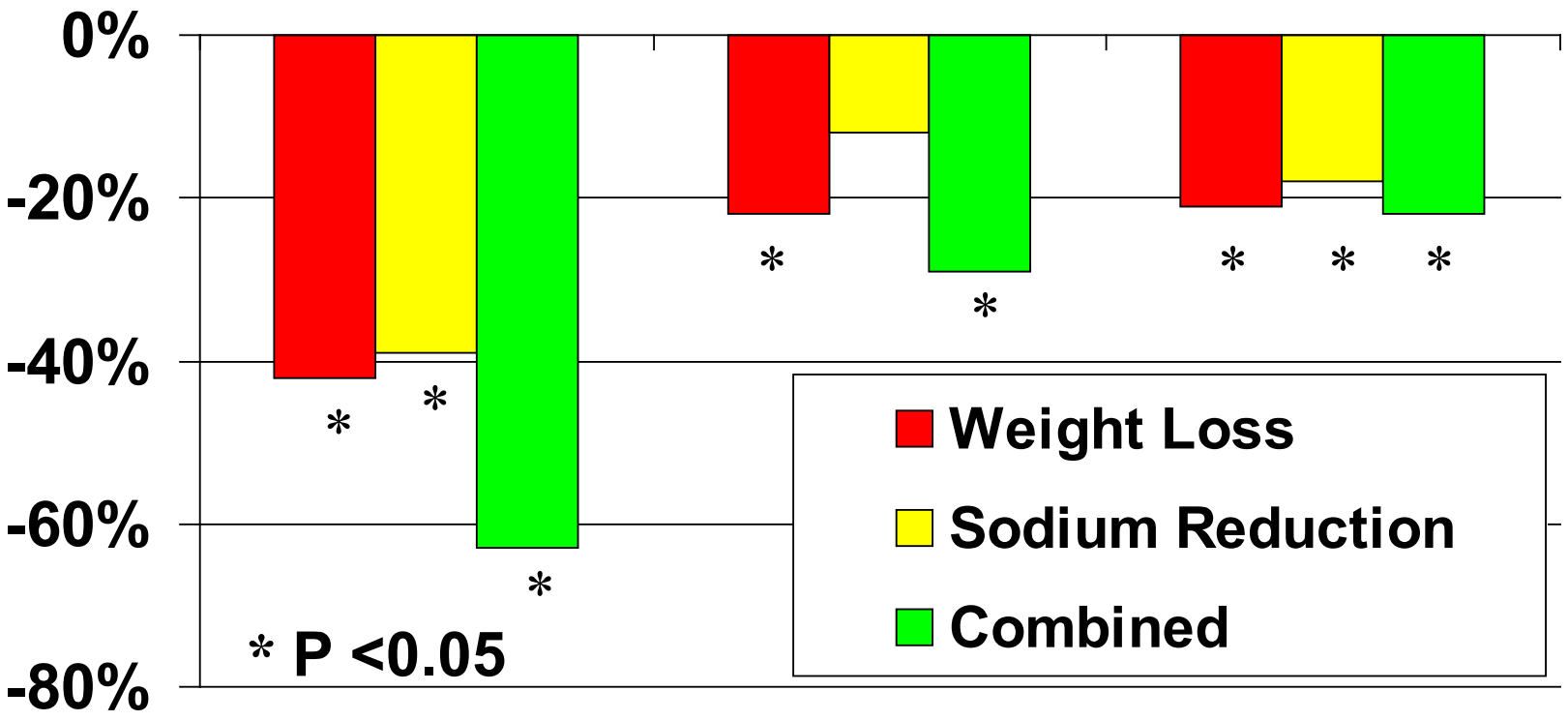
Can Sodium Reduction and/or Weight Loss Prevent Hypertension in Overweight Pre-Hypertensive Adults?

Stamler J et al. Arch Intern Med 1997;157:657-67

Percent Reduction in Incident Hypertension over 36-48 Months from Weight Loss and Sodium Reduction Interventions in TOHP2

Stamler J et al. Arch Intern Med 1997;157:657-67



Trial of Non-Pharmacologic Interventions in the Elderly (TONE, Whelton, 1998)

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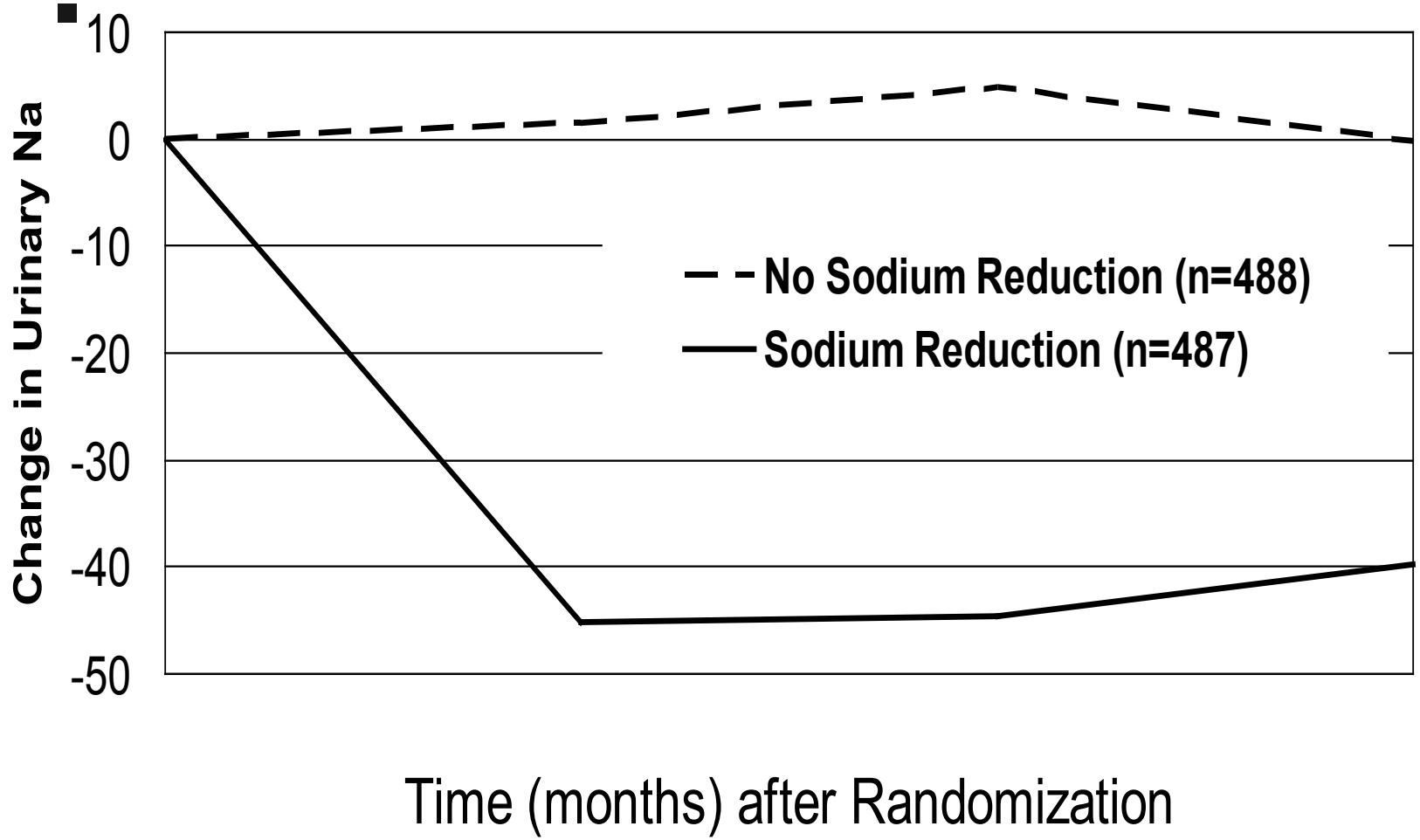
Can Older-Aged (60-80 yr old) Medication-Treated Hypertensive Adults Make and Sustain Lifestyle Changes (Sodium Reduction and Weight Loss) that Control Blood Pressure?

Mean Change in Urinary Sodium Excretion (mmol/24hr) in Older-Aged Persons (TONE)

Whelton PK et al. JAMA 1998;279:839-46



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Can sodium reduction prevent CVD events?

Effects of Reduced Na on CVD Events: Results from 3 Randomized Trials

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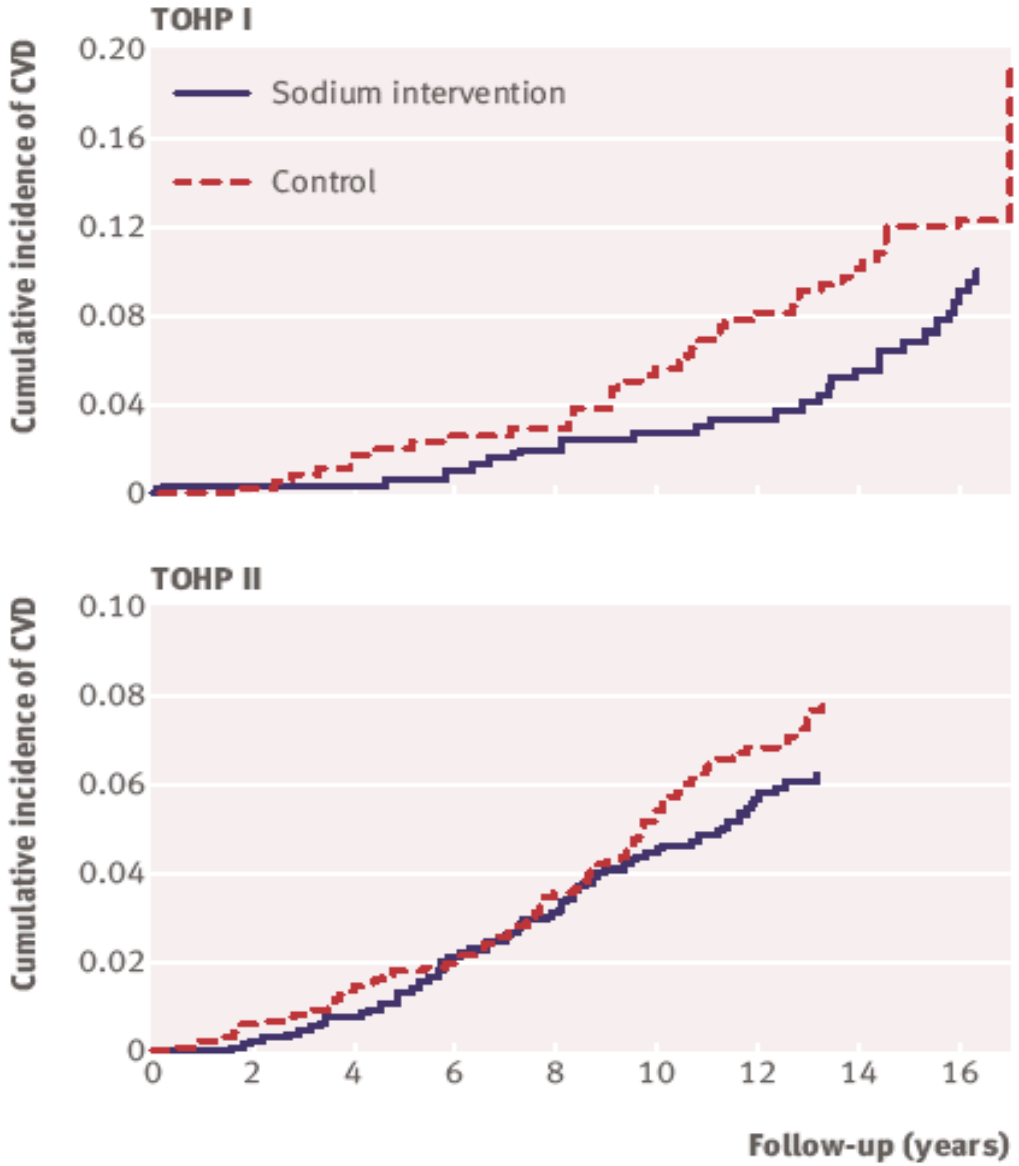
	INTERVENTION	OUTCOME	FU
TONE (2001) 639 Elderly	↓ Na	21% ↓ CVD events	2.3 yrs
Taiwan Veterans (2006) 1,981 Elderly	↓ Na /↑ K Salt	41%* ↓ CVD Mortality	2.6 yrs
TOHP Follow-up (2007) 3,126 Prehypertensives	↓ Na	30%* ↓ CVD events	10-15 yrs

*p<0.05

Effects of Reduced Na Intake on CVD: Longterm Results from the Trials of Hypertension Prevention (Cook et al, BMJ, 2007)



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Case Western Reserve University

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College of Medicine and Life Sciences, The University of Toledo

Ohio University Heritage College of Osteopathic Medicine

Northeast Ohio Medical University

University of Cincinnati Family and Community Medicine

Boonshoft School of Medicine, Wright State University

MedTAPP

Ohio Colleges of Medicine Government Resource Center

Ohio Department of Medicaid

Dietary Strategies to Addressing Hypertension

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Components of DASH

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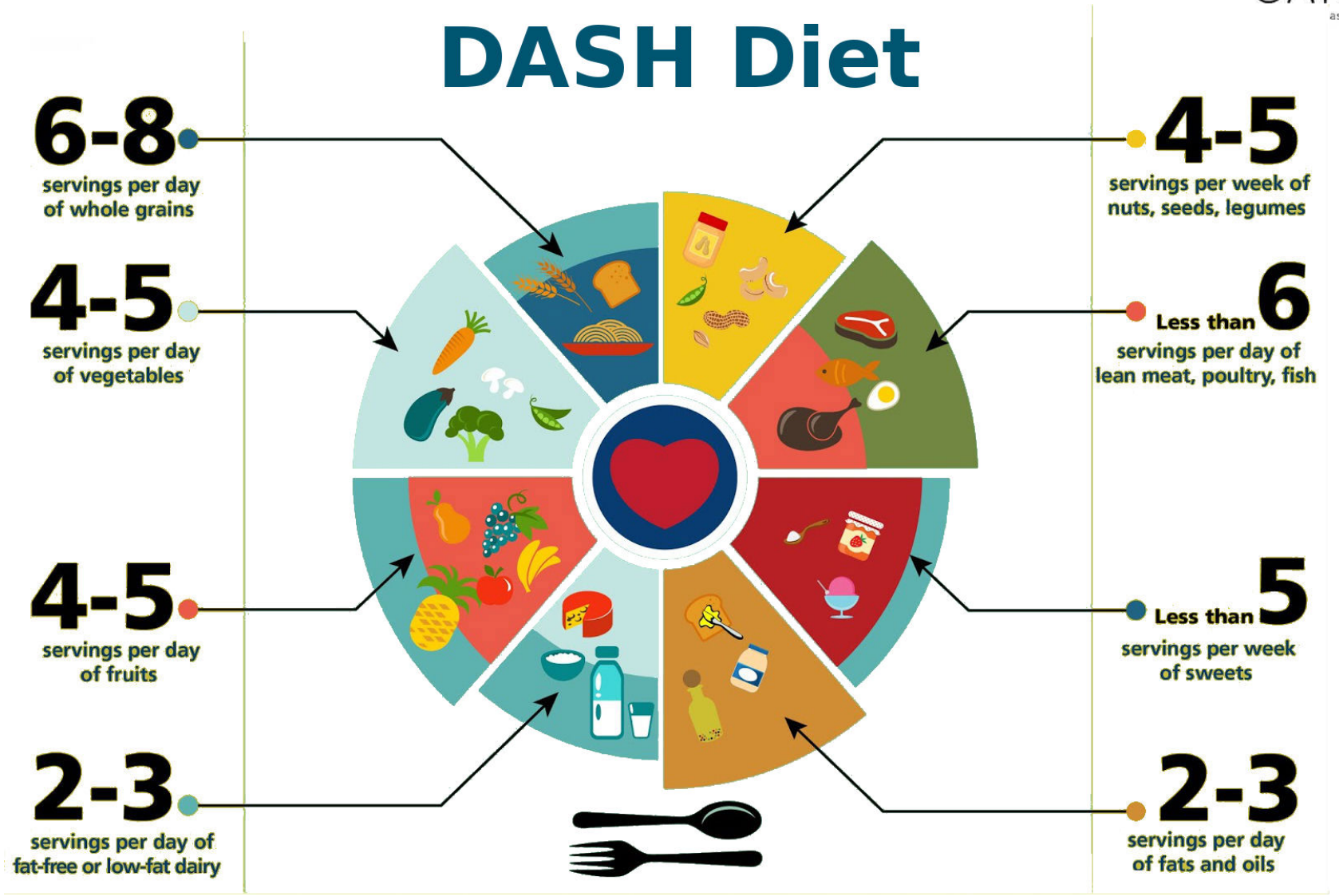

Where is the sodium in the diet?

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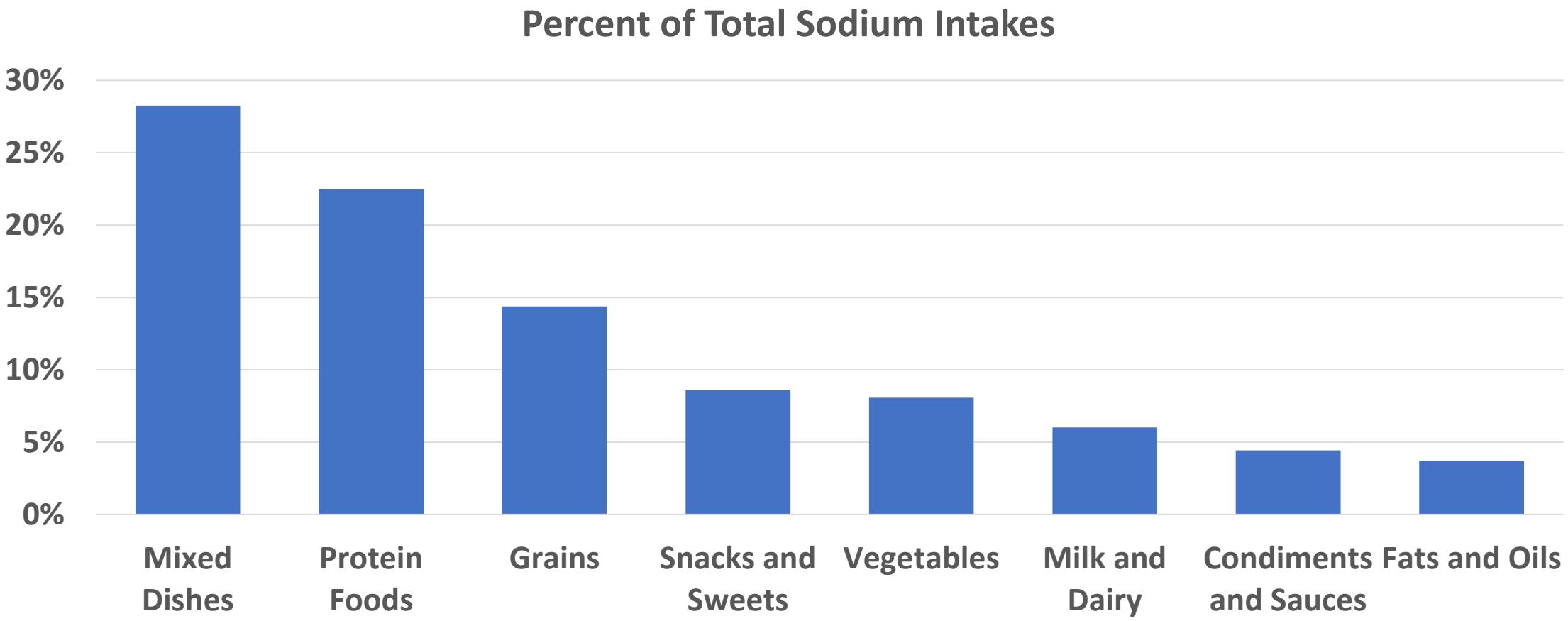
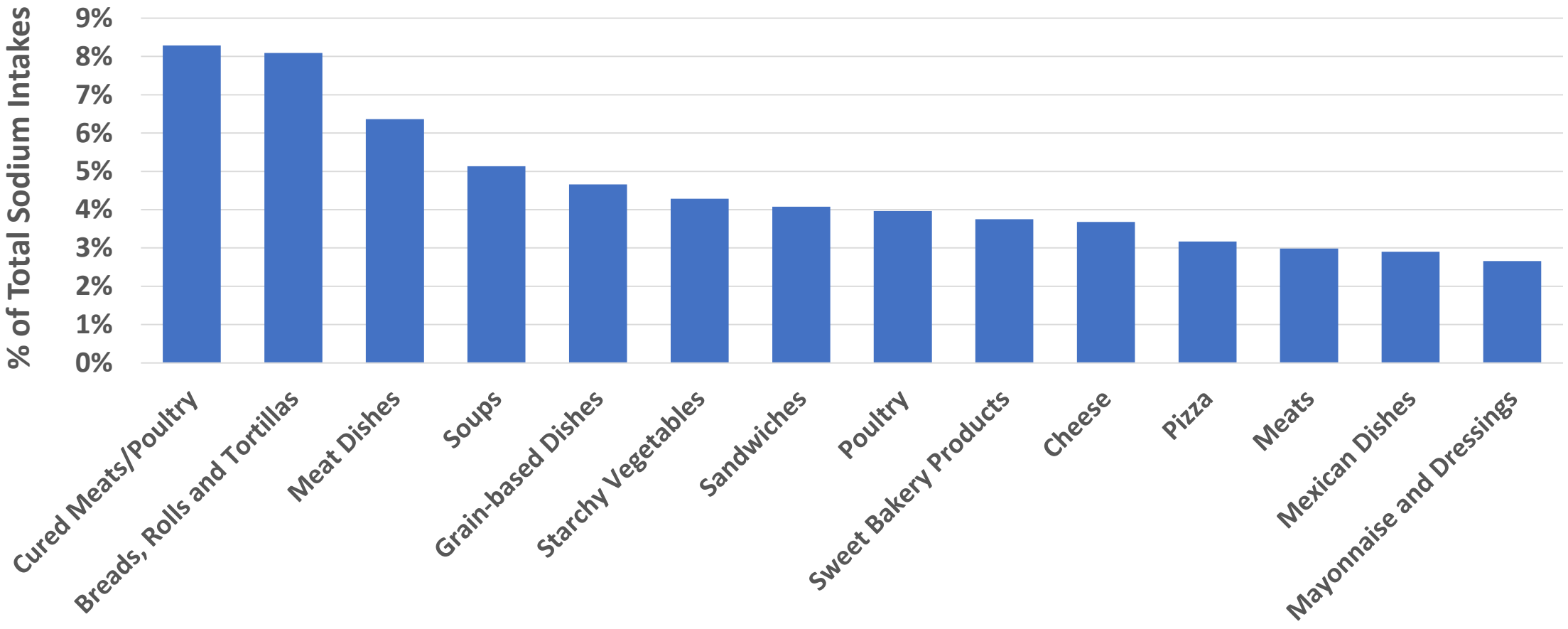


NHANES 2005-2016, ≥50 years

Where is the sodium in the diet?



NHANES 2005-2016, ≥50 years

Understand what a label is and isn't

Nutrition Facts

Serv. Size 1/2 cup (120mL) condensed soup
Servings about 2.5

Calories 90
Fat Cal. 10

*Percent Daily Values (DV) are based on a 2,000 calorie diet.

Amount/serving	%DV*	Amount/serving	%DV*
Total Fat 1g	**2%**	**Sodium** 410mg	**17%**
Sat. Fat 0g	**0%**	**Potassium** 700mg	**20%**
Trans Fat 0g		**Total Carb.** 19g	**6%**
Polyunsat. Fat 0.5g		Fiber 3g	**12%**
Monounsat. Fat 0g		Sugars 5g	
Cholest. 0mg	**0%**	**Protein** 2g	

Vitamin A 35% • Vitamin C 0% • Calcium 2% • Iron 4%

410 mg * 2.5 serv = 1,025 mg

Strategies in sodium reductions

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- Limiting high sodium foods
  - Highly processed foods and soups
- Identify sneaky sources
  - Common foods consumed repeatedly with modest sodium
  - Mixed dishes
- Managing flavor profiles and sensory thresholds
- Implications of fad diets (keto, low carb, gluten-free)

Resources

The DASH Eating Plan

The DASH eating plan shown below is based on **2,000 calories a day.** The number of daily servings in a food group may vary from those listed, depending upon your caloric needs.

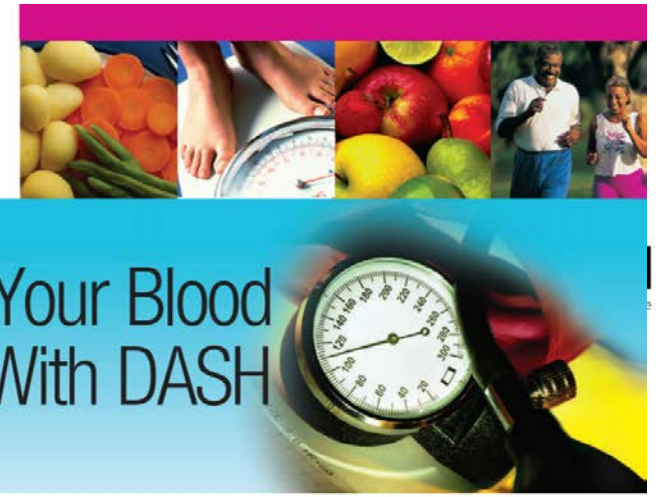
Food Group	Daily Servings (except as noted)	Serving Sizes
Grains and grain products	7–8	1 slice bread 1 cup ready-to-eat cereal* 1/2 cup cooked rice, pasta, or cereal
Vegetables	4–5	1 cup raw leafy vegetable 1/2 cup cooked vegetable 6 ounces vegetable juice
Fruits	4–5	1 medium fruit 1/4 cup dried fruit 1/2 cup fresh, frozen, or canned fruit 6 ounces fruit juice
Lowfat or fat free dairy foods	2–3	8 ounces milk 1 cup yogurt 1 1/2 ounces cheese
Lean meats, poultry, and fish	2 or fewer	3 ounces cooked lean meat, skinless poultry, or fish
Nuts, seeds, and dry beans	4–5 per week	1/3 cup or 1 1/2 ounces nuts 1 tablespoon or 1/2 ounce seeds 1/2 cup cooked dry beans
Fats and oils†	2–3	1 teaspoon soft margarine 1 tablespoon lowfat mayonnaise 2 tablespoons light salad dressing 1 teaspoon vegetable oil
Sweets	5 per week	1 tablespoon sugar 1 tablespoon jelly or jam 1/2 ounce jelly beans 8 ounces lemonade

* Serving sizes vary between 1/2 cup and 1 1/4 cups. Check the product's nutrition label.

† Fat content changes serving counts for fats and oils: For example, 1 tablespoon of regular salad dressing equals 1 serving, 1 tablespoon of lowfat salad dressing equals 1/2 serving, and 1 tablespoon of fat free salad dressing equals 0 servings.

eat right® Academy of Nutrition and Dietetics

Find an RD tool

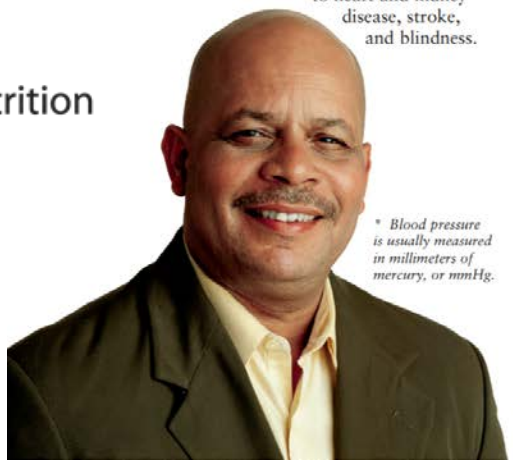


IN BRIEF:

Your Guide To Lowering Your Blood Pressure With DASH

What you eat affects your chances of developing high blood pressure (hypertension). Research shows that high blood pressure can be prevented—and lowered—by following the Dietary Approaches to Stop Hypertension (DASH) eating plan, which includes eating less sodium.

High blood pressure is blood pressure higher than 140/90 mmHg*, and prehypertension is blood pressure between 120/80 and 139/89 mmHg. High blood pressure is dangerous because it makes your heart work too hard, hardens the walls of your arteries, and can cause the brain to hemorrhage or the kidneys to function poorly or not at all. If not controlled, high blood pressure can lead to heart and kidney disease, stroke, and blindness.



* *Blood pressure is usually measured in millimeters of mercury, or mmHg.*

But high blood pressure can be prevented—and lowered—if you take these steps:

- Follow a healthy eating plan, such as DASH, that includes foods lower in sodium.
- Maintain a healthy weight.
- Be moderately physically active for at least 2 hours and 30 minutes per week.
- If you drink alcoholic beverages, do so in moderation.

If you already have high blood pressure and your doctor has prescribed medicine, take your medicine, as directed, and follow these steps.

The DASH Eating Plan

The DASH eating plan is rich in fruits, vegetables, fat-free or low-fat milk and milk products, whole grains, fish, poultry, beans, seeds, and nuts. It also contains less sodium; sweets, added sugars, and beverages containing sugar; fats; and red meats than the typical American diet. This heart-healthy way of eating is also lower in saturated fat, *trans* fat, and cholesterol and rich in nutrients that are associated with lowering blood pressure—mainly potassium, magnesium, calcium, protein, and fiber.

NIH National Heart, Lung, and Blood Institute

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Thank you!

Questions/Discussion