CLINICAL THERAPEUTICS

Dietary Therapy in Hypertension

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This Journal *feature begins with a case vignette that includes a therapeutic recommendation. A discussion of the clinical problem and the mechanism of benefit of this form of therapy follows. Major clinical studies, the clinical use of this therapy, and potential adverse effects are reviewed. Relevant formal guidelines, if they exist, are presented. The article ends with the authors' clinical recommendations.*

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A 57-year-old woman presents to an outpatient clinic for evaluation of hypertension. She has no history or symptoms of cardiovascular disease and reports having gained 15 kg over the past 30 years. Her blood pressure is 155/95 mm Hg, her weight 86 kg, her height 165 cm, her body-mass index (BMI, the weight in kilograms divided by the square of the height in meters) 31, and her waist circumference 98 cm. Her serum triglyceride level is 175 mg per deciliter (2.0 mmol per liter), high-density lipoprotein cholesterol 42 mg per deciliter (1.1 mmol per liter), low-density lipoprotein cholesterol 110 mg per deciliter (2.8 mmol per liter), and glucose 85 mg per deciliter (4.7 mmol per liter). Her clinical profile is thus consistent with the metabolic syndrome.[1] She is a nonsmoker, is sedentary, and eats a diet that is high in white bread, processed meats, and snacks and drinks containing sugars and sodium and is low in fruits and vegetables. She is interested in adopting a healthier lifestyle.

THE CLINICAL PROBLEM

Hypertension is defined as a systolic blood pressure of 140 mm Hg or higher or a diastolic blood pressure of 90 mm Hg or higher.[2] However, morbidity increases among persons whose blood pressure is above 115/75 mm Hg. High blood pressure is associated with an increased risk of stroke, myocardial infarction, heart failure, renal failure, and cognitive impairment.[2-4] Systolic blood pressure above 115 mm Hg is the most important determinant of the risk of death worldwide,[2] being responsible for 7.6 million cardiovascular deaths annually.[3]

From 1960 through 1991, blood pressure decreased in the United States, and after the first 10 years of this interval, the rate of cardiovascular deaths decreased.[2] Effective hypertension screening and treatment were probably the reason for these beneficial trends. However, from 1990 through 2002, blood pressure increased.[5,6] Intake of fruits and vegetables and adherence to healthful dietary patterns declined during this period[7,8] and the prevalence of abdominal obesity increased[9]; both trends have contributed to hypertension.

Among most populations in industrialized countries, the prevalence of hypertension increases dramatically with age; in the United States it rises from about 10% in persons 30 years of age to 50% in those 60 years of age.[6] However, some persons, including strict vegetarians,[10-12] populations whose diet consists mostly of vegetable products,[11,13] and those whose sodium intake is low,[13-15] have virtually no increase in hypertension with age.

STRATEGIES AND EVIDENCE

PATHOPHYSIOLOGY AND EFFECT OF THERAPY

Essential hypertension is the name for hypertension that cannot be attributed to a specific renal or adrenal disease, such as chronic renal failure or an adrenal tumor;

the vast majority of patients with hypertension have essential hypertension. The pathophysiology of essential hypertension is complex, with much remaining to be discovered (Fig. 1, and Section 1 in the Supplementary Appendix, available with the full text of this article at NEJM.org). The three cornerstones of dietary treatment of hypertension — a healthful dietary pattern, reduced sodium intake, and reduced body fat — influence the pathophysiology of hypertension at many of its points of control.

High sodium intake is strongly correlated with the development of hypertension.[16-18] Sodium intake initiates an autoregulatory sequence that leads to increased intravascular fluid volume and cardiac output, peripheral resistance, and blood pressure. The elevation in blood pressure results in a phenomenon called pressure natriuresis, in which increased renal perfusion pressure leads to increased excretion of fluid and sodium. In essential hypertension, however, sodium excretion is impaired. It is hypothesized that in most cases essential hypertension is a genetic disorder involving many individual genes, each of which influences the body's handling of sodium to varying degrees[18] and becomes expressed in the context of an unhealthful dietary environment, particularly one characterized by excessive intake of salt.

Numerous other factors contribute to the pathophysiology of hypertension. Especially in the elderly, large conduit arteries such as the aorta and carotid arteries become stiff and less compliant, increasing systolic blood pressure.[19] Proliferation of smooth-muscle cells and endothelial dysfunction occur in resistance vessels, including small arteries and arterioles, causing vasoconstriction and increasing peripheral vascular resistance.[20-22] Although the systemic renin–angiotensin–aldosterone axis is often suppressed in the presence of elevated blood pressure, angiotensin II activity is increased locally in various tissues, including the kidneys, vascular endothelium, and adrenal glands.[23,24] Increased activity in the sympathetic nervous system may also be a factor.[25-30] Both aging[19,31-33] and obesity[25-30] contribute to the pathogenesis of hypertension through several mechanisms (Fig. 1, and Section 1 in the Supplementary Appendix).

Two effective interventions for lowering blood pressure in patients with hypertension are reducing sodium intake and reducing weight. Reductions in dietary salt lessen the amount of sodium the kidney has to excrete to restore normal blood volume. Compliance in the aorta and carotid artery in older patients with hypertension is improved when sodium intake is reduced.[34] Reduction in sodium intake also improves arterial vasodilatation.[21,22] Weight loss moderates activation of the renin–angiotensin–aldosterone axis[35,36] and the sympathetic nervous system[37,38] and diminishes sodium retention.[39] Decreases in abdominal visceral fat also improve the functioning of both conduit and resistance vessels.[40]

In addition to sodium restriction and weight loss, several other dietary modifications that are collectively termed "a healthful dietary pattern" have been shown to reduce blood pressure. Although the mechanisms of these diets have not been fully clarified, adherence to these diets has been found to reset the pressure–natriuresis curve so that a lower pressure suffices to excrete sodium and reduce blood volume,[41] reduce aortic stiffness,[42] and improve vasodilatation in small resistance vessels.[43,44] As compared with the typical U.S. diet, the kinds of dietary patterns that have been proved to lower blood pressure emphasize fruits, vegetables, and low-fat dairy products; include whole grains, poultry, fish, and nuts; make use of unsaturated vegetable oils; and contain smaller amounts of red meat, sweets, and sugar-containing beverages.[45,46] Clinical trials of such diets have not usually emphasized the identification of specific nutrients or single foods that lower blood pressure but rather have used epidemiologic data to define dietary patterns, such as Mediterranean-style diets[47,48] and vegetarian diets.[11,12] (see Section 2 in the Supplementary Appendix for a discussion of the effects of specific foods and nutrients on blood pressure).

CLINICAL EVIDENCE

The most carefully studied and established healthful dietary patterns are the Dietary Approaches to Stop Hypertension (DASH) diet,[45,49] variants of that diet,[46,50] and variations of the Mediterranean diet.[51,52] In the original DASH trial,[49] 459 adults whose systolic blood pressure was less than 160 mm Hg and whose diastolic blood pressure was 80 to 95 mm Hg, 133 of whom had hypertension, were randomly assigned to a control diet typical of the average U.S. diet, a diet rich in fruits and vegetables, or a combination diet rich in fruits, vegetables, and low-fat dairy products and relatively low in saturated and total fat. Sodium intake and body weight were maintained at

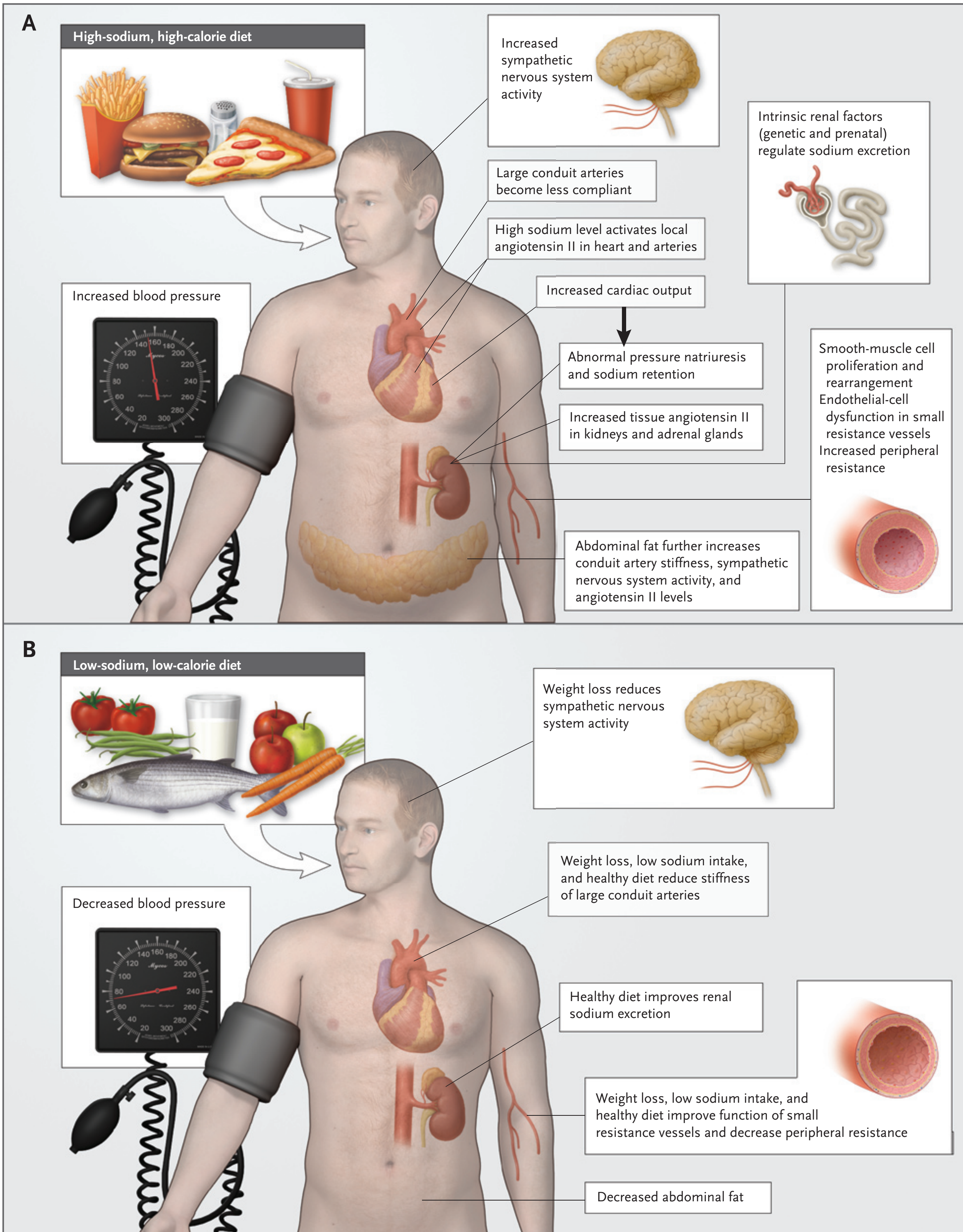

Figure 1. Mechanisms Linked to Increases in Blood Pressure and the Therapeutic Effects of Healthful Dietary Patterns, Sodium Reduction, and Weight Loss.

constant levels. After 8 weeks, among the participants with hypertension, the diet rich in fruits and vegetables reduced systolic and diastolic blood pressure by 7.2 and 2.8 mm Hg more, respectively, than the control diet (P<0.001 and P=0.01, respectively). The combination diet resulted in greater reductions (11.4 and 5.5 mm Hg, respectively, as compared with the control diet; P<0.001 for each). The effects were less pronounced among participants who did not have hypertension at baseline.

In a subsequent trial, the effect of various levels of sodium intake was studied in the context of the DASH diet in 412 participants with blood pressure levels at enrollment similar to those of participants in the original DASH trial.[53] Patients were randomly assigned to either the DASH "combination" diet (now commonly termed the DASH diet) or a control diet. Participants in each group were then given a diet with high, intermediate, and low levels of sodium (3.5, 2.3, and 1.2 g per day, respectively) for 30 days each in random order. Body weight was held constant by adjusting total caloric intake. Reducing sodium intake resulted in a significant incremental reduction in both systolic and diastolic blood pressure in both groups (Fig. 2).

In a secondary analysis from the sodium trial, the blood-pressure–lowering effects of the DASH diet and low sodium were each accentuated as age increased[54] (Fig. 3). Systolic blood pressure was 12 mm Hg higher among participants between 55 and 76 years of age than among those between 21 and 41 years of age when they were given a typical U.S. diet that was high in sodium. This difference in systolic blood pressure is similar to that in the U.S. population when the same age groups are compared.[55] In marked contrast, systolic blood pressure was the same among older and younger participants when they were given the DASH diet with low sodium content. This finding suggests that the typical rise in blood pressure that occurs with age during adult life may be prevented or reversed if the low-sodium DASH diet is followed.

Women, blacks, and those with the metabolic syndrome have a mildly enhanced reduction in blood pressure in response to a low-sodium diet.[53,54,56,57] It is not possible to identify individual patients for whom sodium reduction is especially effective[58] (see Section 3 in the Supplementary Appendix).

Two reduced-carbohydrate versions of the DASH diet were studied in 164 adults enrolled in the Optimal Macronutrient Intake Trial to Prevent Heart Disease (OmniHeart).[46,50] One diet higher in unsaturated fat and another higher in protein were compared with a diet similar to the standard DASH diet but slightly higher in carbohydrates. As compared with the high-carbohydrate diet, the high-protein diet reduced mean systolic blood pressure in participants with hypertension by 3.5 mm Hg and mean diastolic blood pressure by 2.4 mm Hg (P=0.006 and P=0.008, respectively).[50] The comparable effects of the diet high in unsaturated fat were 2.9 and 1.9 mm Hg, respectively (P=0.02 for both). As with the DASH diet itself, these effects were less pronounced in participants who did not have hypertension at baseline.

The traditional Mediterranean diet[47,48] has many similarities to DASH-type diets, especially

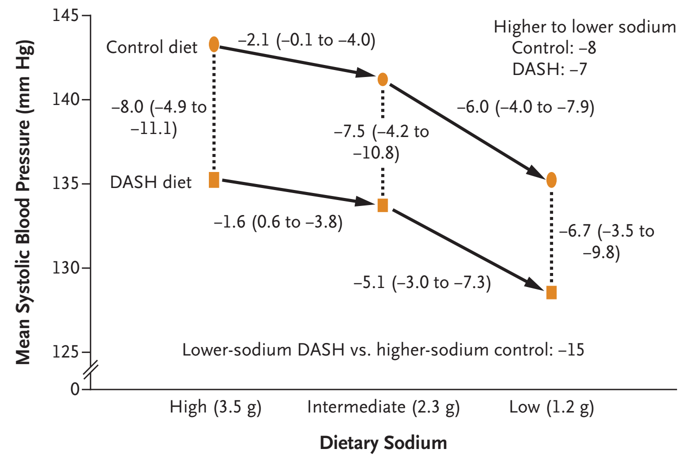

Figure 2. Sodium Reduction, the DASH Diet, and Changes in Systolic Blood Pressure.

The figure shows the additive beneficial effects of the DASH diet and reduced intake of sodium on systolic blood pressure in patients with mild hypertension who were older than 45 years of age. The participants were a subgroup of those in the study of the effects of the DASH diet and reductions in dietary sodium,[53] who were randomly assigned to follow a DASH diet (33 participants) or a typical U.S. diet (37 participants) for 90 days. During that period, each group consumed three versions of the diet adjusted for daily sodium content. The participants in each group consumed each of the sodium-adjusted diets for 30 days in a crossover design; body weight was held constant. The two downward-sloping arrows on the left depict the effect of intermediate sodium intake as compared with higher sodium intake, and the two downward-sloping arrows on the right depict the effect of lower sodium intake as compared with intermediate sodium intake. The dotted lines show the effect of the DASH diet as compared with the typical U.S. diet at each level of dietary sodium. Numbers shown represent the mean changes with 95% confidence intervals. Adapted from Bray et al.[54]

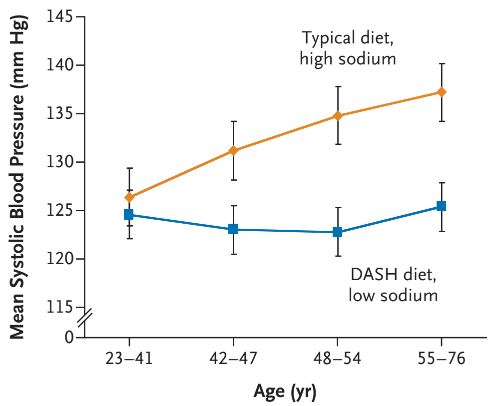

Figure 3. Effects of a Low-Sodium DASH Diet on Systolic Blood Pressure with Increasing Age.

A total of 412 participants were randomly assigned to follow a DASH diet (208 participants) or a typical U.S. diet (control group, 204 participants) for 90 days. During that period, each group consumed three versions of the diet adjusted for daily sodium content: high (3.5 g), intermediate (2.3 g), and low (1.2 g). The participants in each group consumed each of the sodium-adjusted diets for 30 days in a crossover design; body weight was held constant. Mean (±SD) systolic blood pressure is depicted for the DASH group during the period of low sodium intake and for the control group during the period of high sodium intake, according to age, at the end of the 30-day period; there were 45 to 58 participants per group in each of the four age ranges shown. The slope for the control group during the period of high sodium intake was 0.3 mm Hg per year, spanning 30 years. The slope for the DASH-diet group during the period of low sodium intake was 0 mm Hg per year. I bars denote 95% confidence intervals. Data are from Sacks et al.[53]

to the diet from the OmniHeart study that was higher in unsaturated fat. In controlled trials involving patients with the metabolic syndrome[51] or type 2 diabetes,[52] a reduced-carbohydrate Mediterranean diet lowered blood pressure and improved serum lipid levels more than a low-fat diet. In these trials, unlike the DASH trials, weight was not held constant through caloric adjustment; in both cases, patients assigned to the Mediterranean diet lost more weight than those assigned to the low-fat diet.

Epidemiologic studies generally support evidence from clinical trials on the effects of dietary management, as do community-based and clinic-based intervention programs (see Sections 4 and 5 in the Supplementary Appendix).

The effect of adding weight loss to the DASH diet was evaluated in 144 adults in the Exercise and Nutrition Interventions for Cardiovascular Health (ENCORE) study.[59] Participants were randomly assigned to a control diet, to the DASH diet alone, or to a reduced-calorie modification of the DASH diet. At 4 months, blood pressure was reduced by 3.4/3.8 mm Hg in the control group, by 11.2/7.5 mm Hg in the group given the DASH diet alone ($P<0.001$ for both systolic and diastolic pressures as compared with the control diet), and 16.1/9.9 mm Hg with the DASH diet plus weight management ($P=0.02$ for systolic blood pressure and $P=0.05$ for diastolic blood pressure as compared with the DASH diet alone).

CLINICAL USE

Dietary management is appropriate for all patients with hypertension. In addition, patients with prehypertension (systolic blood pressure between 120 and 139 mm Hg or diastolic blood pressure between 80 and 89 mm Hg) should adopt the same dietary changes, given the benefit of dietary therapy at these blood-pressure levels.

Drug therapy plays an essential role in treating hypertension. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure emphasizes that in patients for whom lifestyle modification (including dietary therapy, physical activity, and moderation of alcohol consumption) does not reduce blood pressure below 140/90 mm Hg (or 130/80 mm Hg for patients with diabetes or chronic renal disease), drug therapy should be implemented and modified over time given a patient's response.[2] However, medication should not supplant dietary management; rather, the two forms of treatment should be considered complementary. The DASH diet is effective in combination with angiotensin-receptor blockers.[60] Sodium reduction is highly effective in older patients with hypertension who are taking antihypertensive medicines[61] and in those with resistant hypertension taking several antihypertensive agents.[62]

We guide patients in adopting a healthful diet with the use of a chart or table such as that shown in Table 1. In simple terms, we encourage patients to eat poultry, fish, nuts, and legumes instead of red meat; low-fat and nonfat dairy products instead of full-fat dairy products; vegetables and fruit instead of snacks and desserts high in sugars; breads and pastas made from whole grain instead of white flour; fruit itself rather than fruit juice; and polyunsaturated and monounsaturated cooking oils such as olive, canola, soybean, peanut, corn, sunflower, or safflower rather than butter, coconut oil, or palm-kernel oil. Table 1 provides information about the number of servings and portion sizes for each type of food that should be consumed in 1 week.

Adopting a healthful dietary approach means making the correct choices at the market so that the most healthful foods will be available at home. The recommendations in Table 1 include a food-shopping guide. In the United States, it is common to place healthful foods at the periphery of the market; most weekly shopping should be concentrated there. Use of canned and processed foods should be limited, unless their salt content has been reduced or virtually eliminated. For convenience, low-sodium, frozen, or canned vegetables can be substituted for fresh ones. Sections of the market that contain sweetened beverages, candies, and cookies should be avoided entirely.

Sodium restriction is central to the dietary management of hypertension. Patients should become familiar with reading the food labels that specify the sodium content of packaged and processed foods.[63] Processed foods are often high in sodium. A low sodium diet is sometimes less palatable for patients who are accustomed to a high-sodium diet; however, tastes adapt quickly, and studies have shown that low-sodium diets can be as acceptable to patients as higher-sodium diets.[64] Herbs, spices, and citrus fruit (juice or peel) and other acidic ingredients such as vinegar can be added to dishes to compensate for low sodium content and may even be preferred over foods with higher amounts of sodium.

Patients should not skip meals, should consume one third of their daily food intake at breakfast, and should limit eating in restaurants to no more than once weekly. Eating in many restaurants subverts the goal of a low-sodium diet, since one serving of some soups, sandwiches, fried chicken, or pizza can far exceed the total recommended daily amount of sodium.[65] The health care reform law includes a requirement that all chain restaurants with more than 20 locations provide information for consumers regarding the amount of sodium and other dietary components in menu items.[66]

Compliance with dietary therapy is better, and success rates in achieving blood-pressure control are higher, when accompanied by active guidance or counseling of the patient by clinicians or ancillary medical personnel with expertise in dietary management.[67-72] We always recommend that patients record their dietary intake for 1 or 2 weeks and discuss this record with a dietitian, who will provide specific meal plans. This is especially important when weight loss is needed. Follow-up with a dietitian is essential, whether arranged in individual or group appointments. In addition, numerous Web sites[73-76] and books[77-80] can provide patients with further information and guidance on healthful diets.

The costs associated with dietary treatment of hypertension are relatively modest. In one study in the Boston area conducted in 2006, the cost of the DASH meal plan was $31 per week in areas with low socioeconomic status and $40 per week in areas with high socioeconomic status; perceived affordability was similar for patients interviewed in clinics in both areas.[81] An initial consultation with a dietitian costs approximately $150, and follow-up consultations about $100. Coverage of this service by health insurance or employer programs varies.

ADVERSE EFFECTS

Adverse events generally occurred less frequently in persons following the DASH diet and its variants or Mediterranean diets[49,52,53] (see Section 6 in the Supplementary Appendix).

AREAS OF UNCERTAINTY

One crucial frontier of dietary research is that of devising and evaluating effective behavioral and community-based interventions. In the DASH trials, dietary modifications were studied over a short time span, and participants were carefully monitored for compliance. Compliance is an essential element in the long-term dietary treatment therapy of hypertension, and we need to learn what components of behavioral interventions lead to adherence.[82] In addition, no large, long-term, clinical-outcomes trial of these diets has been performed, although one long-term observational study of an earlier randomized trial and one relatively short-term randomized trial reported a decrease in the incidence of cardiovascular events with sodium reduction (see Section 7 in the Supplementary Appendix).[83,84] However, we believe that it is not necessary to conduct a large-scale, randomized trial to address this question in

Table 1. Recommended Weekly and Occasional Food Purchases for One Person Following a Healthful Diet Containing 2100 kcal and 1500 mg of Sodium per Day.*

Type of Food	Servings per Wk	Serving Size	Total Amount Purchased per Wk	Recommendations
Weekly purchases				
Market periphery				Do most weekly shopping in this section
Vegetables†				
Leafy greens				
Salad greens	4	1 cup	1–2 bags or heads	Lettuce, mixed spring greens, spinach bunch (about 1 lb)
Other greens	4	1/2 cup	1–2 bunches	Kale, collard greens, mustard greens (about 1 lb)
Cruciferous	3	1/2 cup	1–2 heads	Broccoli, cabbage, cauliflower (about 1 lb)
Colorful‡	15	1/2 cup	8–12 individual items	Tomatoes, carrots, squash, peppers, sweet potatoes, corn, eggplant, avocados (about 3 lb)
Other	3	1/2 cup	1/2 lb	Celery, green beans, peas, lima beans, sprouts
Fruits				
Fresh	20	1 medium or 1/2 cup chopped	15–20 individual items	Apples, pears, grapes, bananas, peaches, plums, oranges, tangerines, berries, cantaloupe, pineapple
Dried	8	1/4 cup	1 bag	Raisins, apricots, prunes, cherries (about 1/2 lb)
Juice	4	1 glass (8 oz)	1 qt	Orange, grapefruit, unsweetened carrot
Herbs, alliums, and other seasonings	Use freely			Thyme, ginger, garlic, onion, bay leaf, lemon juice
Meat, poultry, and fish				
Fish and shellfish	2	6–8 oz	1 lb	Cod, sea bass, halibut; fresh or canned salmon, tuna, or sardines; mollusks, shrimp, crabmeat
Poultry	2	6–8 oz	1 lb	Turkey, chicken, low-sodium cold cuts
Red meats	1	2–4 oz	1/4 lb	Beef, pork, lamb, low-sodium cold cuts
Dairy products				
Milk	10	1 glass (8 oz)	1/2 gallon	Choose low-fat or nonfat products
Yogurt	3	1 cup	1 container	Choose low-fat or nonfat products (about 32 oz)
Cheese	4	1 slice	1/4 lb	Soft or hard

Processed-food aisles§				Choose only low-sodium products¶
Nuts (whole or butter)	10	1 oz	1 bag or jar	Walnuts, almonds, peanuts (about 1/2 lb)
Legumes	3	1 cup	1 can or bag	Chickpeas, lentils, black beans (about 1 lb)
Olives	2	1/2 cup	1 jar	Black, green, stuffed (about 1/4 lb)
Spices	Use freely			Black pepper, cayenne, cinnamon, paprika
Baked goods	20	1 slice	1 bag	Bread, rolls, pancakes, waffles (about 1 1/2 lb); choose whole-grain products
Tomato products	4	2/3 cup	2 jars or cans	Sauce, juice, whole or diced (about 12 oz per jar or can)
Chips and other snacks	3	1/2 cup	3 bags	Tortilla chips, popcorn, pretzels (about 1 1/2 oz per bag)
Chocolate or sweets	1	1 oz	1 bar or similar amount	Granola bars, chocolate bars (about 1 oz)
Other food aisles (sweetened beverages, candy, cookies)				Skip these aisles
Less frequent purchases‖				
Breakfast cereals	2	1/2 cup	1 1/2 cups	Oats, bran, whole wheat flakes, other whole grains
Pasta, rice, and grains	3	1 cup (cooked)	1/2 cup	Pasta, brown rice, bulgur, quinoa, wheat berries
Cooking oils	12	1 tbs	3/4 cup	Canola, corn, sunflower, olive, soybean
Table fats	16	1 tsp	1/3 cup	Soft, oil-based spreads free of trans fat
Salad dressings and mayonnaise	21	1 tsp	1/2 cup	Choose low-sodium items
Sugars	24	1 tsp	1/2 cup	Table sugar, jelly, honey, maple syrup
Desserts	1	1/2 cup	1/2 cup	Ice cream, sorbet, frozen yogurt, other (4 oz)
Eggs	3	1	3	Large eggs
Salt	7	1/3 tsp	2 1/3 tsp	Salt for cooking or added at the table

* Patients should observe the following general recommendations: don't skip meals, and consume one third of daily calorie intake at breakfast; limit eating out to once weekly and choose meals with a low salt content — just one slice of pizza, a turkey sandwich, or a pasta dish can easily contain 2000 mg of sodium. Examples of conversion from standard to metric measures: 1 oz equals 28 g; 1 teaspoon, 5 g; 1 cup leafy greens, about 75 g.
† Unsalted frozen or canned vegetables can be substituted for fresh vegetables.
‡ Choose at least four different types of vegetables from this category.
§ Also visit the processed-food aisle as needed for other food items in the less frequent purchases category.
¶ Look for lower-sodium, unsalted, or reduced-salt items. Compare brands and choose those with lower sodium content. The total amount of sodium consumed in a week from processed foods or eating out should not exceed 2000 mg.
‖ Weekly allowances are provided for items that are generally purchased less than once a week. The amounts for weekly intake should be set aside in individual containers to make it easier to keep track of how much is consumed.

view of the known benefits of healthful diets with regard to blood pressure and other risk factors.

GUIDELINES

We recommend the American Heart Association guidelines for cardiovascular health and the dietary management of hypertension.[85,86] These guidelines endorse foods and approaches to diet similar to those included in the DASH diet and cite intake of 65 mmol, or 1.5 g, of sodium per day as optimal. In addition, a target BMI of less than 25 is recommended. Finally, the guidelines recommend no more than two alcoholic drinks per day for men and one for women and people of lighter weight. (One drink is equivalent to 12 oz of beer, 5 oz of wine, or 1.5 oz of 80-proof liquor, each of which represents approximately 14 g of ethyl alcohol.)

CONCLUSIONS AND RECOMMENDATIONS

The diet of the patient described in our vignette is very different from the healthful diets recommended for the management of hypertension, and it is therefore reasonable to assume that dietary change could normalize her blood pressure. The patient should be given written instructions on how to adopt a healthful diet such as the DASH diet, a reduced-carbohydrate version of the DASH diet, or a Mediterranean-style diet. The instructions should include ways to substantially reduce sodium intake. We also recommend a small consistent daily reduction in caloric intake of 200 to 300 kcal per day, coupled with an increase in physical activity. Her physician should schedule a consultation with a dietitian, including a regular schedule of follow-up visits. The patient should monitor her blood pressure at home, with an automated machine, at least once a month, preferably more frequently. A trial of intensive dietary treatment is warranted for 6 months to try to achieve the targeted goal for blood pressure (systolic blood pressure <140 mm Hg, diastolic blood pressure <90 mm Hg) before medication is introduced.

No potential conflict of interest relevant to this article was reported. Disclosure forms provided by the authors are available with the full text of this article at NEJM.org.

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