

## Dash Diet

### Description/Etiology

Hypertension is currently defined in the United States as a systolic blood pressure (BP) of 140 mm Hg or greater and/or a diastolic BP of 90 mm Hg or greater that is sustained across three or more periodic readings. Hypertension is often called a “silent killer” because it is commonly asymptomatic. High BP is a leading risk factor for cardiovascular disease (CVD) and kidney disease. Left untreated, hypertension can lead to myocardial infarction (MI), heart failure, stroke, and/or kidney failure.

Treatment focuses on lowering BP to reduce risk for complications including dietary and behavioral changes (e.g., weight reduction, regular exercise) and pharmacologic therapy (e.g., diuretics, angiotensin-converting enzyme [ACE] inhibitors, angiotensin-receptor blockers [ARBs], beta blockers, or calcium channel blockers). Dietary treatment strategies for hypertension include reducing salt intake, limiting alcohol intake, increasing intake of dietary fiber, and following an eating plan called the **Dietary Approaches to Stop Hypertension (DASH)** diet.

The DASH diet was created in 1997 after results of an 11-week clinical trial revealed that dietary modification is effective in reducing BP. Although the DASH diet moderately restricts intake of alcohol and caffeine, it is noted more for its inclusion of foods than for its limitations. The DASH diet focuses on food choices that are high in fiber, moderate in fat and protein, and low in saturated fat, cholesterol, and sodium. Eating a variety of fruits and vegetables is encouraged along with consuming whole grains, legumes, nuts, seeds, low-fat dairy products, and lean meats.

### Facts and Figures

Based on a 2,000 calorie/day diet, the daily components of the DASH diet include 7–8 servings of grains, 4–5 servings of fruits, 4–5 servings of vegetables, 2–3 servings of low-fat dairy products, and  $\leq 2$  servings of lean meat. Eating nuts, seeds, and dry beans is recommended 4–5 times weekly. Caffeine is restricted to no more than 3 beverage servings/day and alcohol is limited to no more than 2 standard size alcoholic beverages/day.

### Risk Factors

Risk factors for hypertension include Black race, family history of hypertension, smoking, high levels of stress or anxiety, alcoholism, and obesity. High dietary intake of sodium may be a risk factor for hypertension in persons who are genetically predisposed to sodium sensitivity. Risk of secondary hypertension is increased in many conditions, including chronic renal disease, diabetes mellitus (DM), and hyperthyroidism. Certain medications can induce hypertension, including oral contraceptives, corticosteroids, and nonsteroidal anti-inflammatory drugs (NSAIDs).

### Signs and Symptoms/Clinical Presentation

Although persons with hypertension are frequently asymptomatic, presenting signs and symptoms can include headache, dizziness, flushed face, fatigue, and, in persons with severe hypertension, renal failure, neurologic manifestations, and CVD.

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## Nutritional Assessment

### › Patient Medical History

- Ask about the following:
  - Family history of hypertension
  - Medical conditions (e.g., thyroid disorder, DM, heart or renal failure)
  - Symptoms(e.g., vomiting,diarrhea,constipation, pain, fatigue, headaches), if any, including onset and characteristics, which can have a negative effect on dietary intake
  - Level and type of regular physical activity

### › Physical Findings of Particular Interest for Hypertension

- Fourth heart sound may be present
- Edema in the extremities and waist may be present
- Retinal hemorrhages, exudates, and arteriolar narrowing reflect potentially severe hypertension

### › Patient Dietary History

- Conduct a diet analysis by asking the patient to complete a diet history
  - Useful tools for evaluating the patient’s dietary strengths and weaknesses include a food frequency questionnaire and a 3-day diet recall (i.e., patient recall of all foods and beverages consumed in a 3-day period) that includes 1 weekend day
- Ask about personal habits, including alcohol, caffeine, and soda consumption; smoking; eating at night; and frequenting vending machines or fast food
- Assess for anxiety and depression, which can interfere with dietary intake

### › Anthropometric Data

- Calculate the patient’s BMI by dividing body weight (kilograms) by height (meters squared) or 703 multiplied by weight (pounds) and divided by height (inches squared)
  - Underweight: < 18.5; **normal: 18.5–24.9**; overweight: 25–29.9; obese: > 30
  - In patients over 65 years of age, evidence suggests that a slightly higher BMI (25–27) may help prevent bone deterioration and is associated with a lower risk of mortality
  - In some cases, body composition testing (e.g., dual-energyx-ray absorptiometry scan, skin calipers) may be necessary

### › Laboratory Tests and Diagnostic Tests of Particular Interest to the Nutritionist

- Urinalysis and urinary albumin: creatinine ratio helps to assess renal function
- Fasting lipids, creatinine levels, and vitamin K levels are ordered to assess renal and adrenal function; thyroid-stimulating hormone is ordered to assess thyroid function
- Serum sodium levels may indicate hyponatremia in untreated persons; patients who are receiving dietary treatment that includes reduced sodium should also be monitored for hyponatremia

## Treatment Goals

### › Normalize Blood Pressure, Promote Symptomatic Relief, and Educate

- Review results of laboratory tests and diagnostic studies used to assess for or monitor complications; and report nutritional status-related findings to the treating clinician as they are obtained
- Review diet history information to assess dietary intake and patterns and provide detailed patient education regarding the DASH diet and other dietary changes
- Assess patient/family anxiety level, learning readiness, and for knowledge deficits regarding hypertension and the DASH diet; provide emotional support and educate about the hypertension diagnosis, risk factors, potential complications, treatment risks and benefits, the benefits of the DASH diet and other dietary changes, and individualized prognosis

## Food for Thought

- › The DASH diet is proven effective in reducing hypertension (Siervo et al., 2015), particularly in Black persons where it has shown the most significant reduction in heart disease risk compared with other ethnic groups (Boggs et al., 2015). Unfortunately, cultural differences and fewer food options impede compliance in under-resourced Black communities. Evidence shows that applying culturally relevant modifications to the DASH diet can increase acceptability,lower perceived barriers to adherence, and improve patient well-being (Whit-Glover et al., 2013)
- › Although high sodium intake is not thought to cause hypertension in most people, a sodium-controlled diet appears to be beneficial in many persons with hypertension. Results of several studies show that the best results occur when the DASH diet is coupled with sodium restriction. Additionally, for patients with hypertension who are overweight or obese, adding

exercise and weight loss to the DASH diet can result in larger reductions in BP and cardiovascular risk markers compared with the DASH diet alone (Blumenthal et al., 2010)

- › While the DASH diet is known for its effectiveness in the treatment of hypertension, adherence to the DASH diet is also associated with improved cognitive function and reduced incidence of heart disease, colorectal cancer (CRC), and DM, type 2 (DM2)
  - Results of a prospective cohort study, which included 16,144 women aged 70 years and older, showed that long-term adherence to the DASH diet is associated with better cognitive function as compared with global cognitive scores. The superior cognitive function was the equivalent of being one year younger (Berendsen et al., 2017)
  - Researchers studied the dietary patterns of 6,258 adults in Canada and found that strong adherence to the DASH diet was associated with a 33% reduction in risk of CRC in men but not in women (Jones-McLean et al., 2015)
  - According to the results of a meta-analysis, which examined the effect of the DASH diet on indicators of glycemic control, the DASH diet significantly reduces fasting insulin concentration when prescribed for more than 16 weeks (Shirani et al., 2013)
  - Authors of a meta-analysis, which reviewed 6 studies regarding adherence to DASH dietary patterns and incidence of stroke, CVD, coronary heart disease (CHD), and heart failure (HF) report that following a DASH-like diet significantly reduces the risk of the following diseases: stroke (19%), CVD (20%), CHD (21%), and HF (29%) (Salehi-Abargouei et al., 2013)

## Red Flags

- › Similar to the benefits of any lifestyle-oriented treatment protocol, the beneficial effects of the DASH diet are directly related to good patient adherence. Adequate patient/family education about the benefits of the DASH diet and other treatment strategies is imperative to successful adherence

## What Do I Need to Tell the Patient/Patient's Family?

- › Eat a well-rounded diet that follows guidelines for the DASH diet and includes low-sodium food options
- › The desire for salt is learned and it diminishes with time; after following a diet low in sodium for 3 months, the craving for salt typically subsides
- › Continued medical surveillance is essential to reduce risk of developing hypertension-related complications
- › Participate in daily physical activity. Exercise reduces stress hormones, increases the sense of well-being, improves sleep, and improves overall health

## Discharge Planning

- › Eat a calorie-appropriate, low-sodium, DASH diet that includes fish and other lean proteins, unsaturated fats (including omega-3), complex carbohydrates (e.g., whole unrefined grains), legumes, unsalted nuts and seeds, and a variety of fruits and vegetables
- › Participate in regular physical activity of at least 150 minutes each week, including strength training at least 2 days each week
- › Recruit the help of family and friends to assist in meal planning, grocery shopping, and food preparation

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