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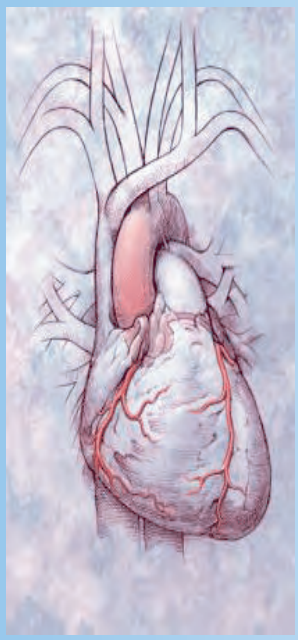

AHA Scientific Statement

Contemporary Definitions and Classification of the Cardiomyopathies

Definitions and Proposed Contemporary Classification (2006)[1]

Definitions

The expert consensus panel proposes this definition: Cardiomyopathies are a heterogeneous group of diseases of the myocardium associated with mechanical and/or electrical dysfunction that usually (but not invariably) exhibit inappropriate ventricular hypertrophy or dilatation and are due to a variety of causes that frequently are genetic. Cardiomyopathies either are confined to the heart or are part of generalized systemic disorders, often leading to cardiovascular death or progressive heart failure–related disability.

Classification

Cardiomyopathies are divided into 2 major groups based on predominant organ involvement. Primary cardiomyopathies (genetic, nongenetic, acquired) are those solely or predominantly confined to heart muscle and are relatively few in number (Figure 1). Secondary cardiomyopathies show pathological myocardial involvement as part of a large number and variety of generalized systemic (multiorgan) disorders (Table 1). It is also important to specify those disease entities that have not been included as cardiomyopathies in the present contemporary classification. These include pathological myocardial processes and dysfunction that are a direct consequence of other cardiovascular abnormalities such as that which occurs with valvular heart disease, systemic hypertension, congenital heart disease, and atherosclerotic coronary artery disease producing ischemic myocardial damage secondary to impairment in coronary flow. Therefore, the commonly used term "ischemic cardiomyopathy," referring to myocardial ischemia and infarction, is not supported by this panel, nor is it part of the formal classification scheme.

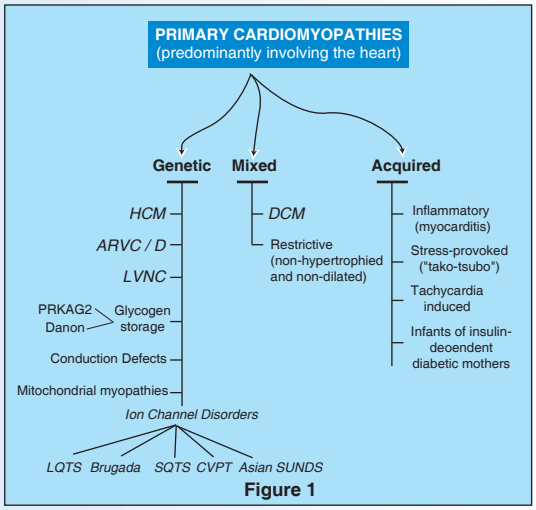

Figure 1

HCM - Hypertrophic Cardiomyopathy, ARVC/D - Arrhythmogenic Right Ventricular Cardiomyopathy / Dysplasia, LVNC- LV noncompaction, DCM - Dilated Cardiomyopathy, LQTS- Long QT Syndrome, SQTS-Short - QT Syndrome, CVPT - Catecholaminergic Polymorphic Ventricular Tachycardia, SUNDS - Sudden unexplained nocturnal death syndrome.

Table 1: Secondary Cardiomyopathies

Infiltrative*
Amyloidosis, Gaucher, Hurler's, Hunter's disease
Storage disease
Toxicity- Drugs, heavy metals, chemical agents
Endomyocardial
Endomyocardial fibrosis, Hypereosinophilic syndrome
Inflammatory (granulomatous)-Sarcoidosis
Endocrine - DM, Hyper & Hypothyroidism
Pheochromocytoma- Acromegaly,
Cardiofacial - Noonan syndrome
Neuromuscular/neurological
Friedreich's ataxia, Duchenne - Becker muscular dystrophy, Myotonic dystrophy, Neurofibromatosis, Tuberous sclerosis
Nutritional deficiencies
Beriberi, pallagra, scurvy, kwashiorkor
Autoimmune / collagen
SLE, Dermatomyositis, RA, Scleroderma,PAN
Electrolyte imbalance
Consequence of cancer therapy

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AHA Scientific Statement

Diet and Lifestyle Recommendations Revision 2006

Improving diet and lifestyle is a critical component of the American Heart Association's (AHA's) strategy to prevent cardiovascular disease (CVD), the leading cause of morbidity and mortality in Americans. This document presents diet and lifestyle recommendations designed to meet this objective. Consistent with the strategic plan of the AHA, the 2006 AHA Diet and Lifestyle Recommendations are one component of a comprehensive plan to achieve specific goals for cardiovascular risk reduction (Table 1). The recommendations (Table 2) are appropriate for the general public, including adults and children over 2 years of age. Separate AHA dietary guidelines specifically addressing the special needs of growing children have recently been published. The AHA 2006 Diet and Lifestyle Recommendations are intentionally flexible to meet the unique needs for growth, development, and aging.

PUBLIC HEALTH AND CLINICAL APPLICATION OF AHA DIET AND LIFESTYLE RECOMMENDATIONS

Public Health Recommendations

The recommendations contained in this document provide a foundation for a public health approach to CVD risk reduction through healthy eating habits and other lifestyle factors. In recent years, obesity has emerged as a major nutritional problem in the United States. For this reason, this document contains expanded information on nutrition and physical activity approaches to preventing or managing obesity and minimizing its complications.

Clinical Recommendations

The general recommendations contained in this document generally can be applied to the clinical management of patients with or at risk for CVD. For certain patients at higher risk, the recommendations may have to be intensified. Although great advances have been made in prevention and treatment of CVD through drug therapies and procedures, diet and lifestyle therapies remain the foundation of clinical intervention for prevention.

GOALS

The AHA Diet and Lifestyle Goals are intended to reduce CVD risk (Table 1). They provide guidance for adults and children over the age of 2 years.

TABLE 1. AHA 2006 Diet and Lifestyle Goals for Cardiovascular Disease Risk Reduction

- Consume an overall healthy diet.
- Aim for a healthy body weight.
- Aim for recommended levels of low-density lipoprotein (LDL) cholesterol, high-density lipoprotein (HDL) cholesterol, and triglycerides.
- Aim for a normal blood pressure.
- Aim for a normal blood glucose level.
- Be physically active.
- Avoid use of and exposure to tobacco products.

Consume an Overall Healthy Diet

Although the vast majority of research studies have focused on individual nutrients and foods, it is well recognized that multiple dietary factors influence the risk of developing CVD and its major risk factors. To a much lesser extent, research has examined the health effects of the whole diet; both observational studies and clinical trials. These data have documented that healthy dietary patterns are associated with a substantially reduced risk of CVD, CVD risk factors, and noncardiovascular diseases. An emphasis on whole diet is also appropriate to ensure nutrient adequacy and energy balance. Hence, rather than focusing on a single nutrient or food, individuals should aim to improve their whole or overall diet. Consistent with this principle, the AHA recommends that individuals consume a variety of fruits, vegetables, and grain products, especially whole grains; choose fat-free and low-fat dairy products, legumes, poultry, and lean meats; and eat fish, preferably oily fish, at least twice a week (Table 2).

Aim for a Healthy Body Weight

A healthy body weight is currently defined as a body mass index (BMI) of 18.5 to 24.9 kg/m^2. Overweight is a BMI between 25 and 29.9 kg/m2, and obesity is a BMI $\geq$30 kg/m^2. In the United States, achieving and maintaining a healthy weight throughout life is particularly difficult. Currently, about one third of adults are overweight, and an additional one third are obese. The prevalence of overweight and obesity has increased dramatically over the past 20 years, and the problem has now reached epidemic proportions. Of particular concern is that this trend has shown no signs of abating.

Obesity is an independent risk factor for CVD. Excess body weight adversely affects CVD risk factors (eg, increasing low-density lipoprotein [LDL] cholesterol levels,

TABLE 2. AHA 2006 Diet and Lifestyle Recommendations for Cardiovascular Disease Risk Reduction

- Balance calorie intake and physical activity to achieve or maintain a healthy body weight.
- Consume a diet rich in vegetables and fruits.
- Choose whole-grain, high-fiber foods.
- Consume fish, especially oily fish, at least twice a week.
- Limit your intake of saturated fat to <7% of energy, trans fat to <1% of energy, and cholesterol to <300 mg per day by
  - choosing lean meats and vegetable alternatives;
  - selecting fat-free (skim), 1%-fat, and low-fat dairy products; and
  - minimizing intake of partially hydrogenated fats.
- Minimize your intake of beverages and foods with addedsugars.
- Choose and prepare foods with little or no salt.
- If you consume alcohol, do so in moderation.
- When you eat food that is prepared outside of the home, follow the AHA Diet and Lifestyle Recommendations.

triglyceride levels, blood pressure [BP], and blood glucose levels, and reducing high-density lipoprotein [HDL] cholesterol levels) and increases the risk of developing coronary heart disease (CHD), heart failure, stroke, and cardiac arrhythmias.

The causes of this dramatic population-wide increase in overweight and obesity are multifactorial. Implicated factors include increased portion sizes; high– calorie-density foods; easy access to plentiful, inexpensive food; sedentary lifestyle; and commercial and cultural influences that, in aggregate, encourage calorie consumption in excess of calorie utilization. No one factor appears responsible for the epidemic. Hence, the optimal strategy to retard the epidemic must likewise be multifactorial.

Achieving and maintaining a healthy weight throughout the life cycle are critical factors in reducing CVD risk in the general population. Data indicate that body weight at 18 years tracks with subsequent risk of developing CVD and diabetes, as does weight gain after 18 years of age. It is important to intensify efforts in the general population to help individuals avoid inappropriate weight gain during childhood and subsequent weight gain during adult years. Increased emphasis should be put on prevention of weight gain, because achievement and maintenance of weight loss, although certainly possible, require more difficult behavioral changes (ie, greater calorie reduction and more physical activity) than prevention of weight gain in the first place.

Aim for a Desirable Lipid Profile

LDL, which is the major cholesterol-carrying lipoprotein particle in plasma, is primarily derived from lipoprotein particles made by the liver. As levels of LDL cholesterol increase, so does the risk of developing CVD. LDL levels are classified as follows: optimal, 100 mg/dL; near or above optimal, >100 to 129 mg/dL; borderline high, 130 to 159 mg/dL; high, 160 to 189 mg/dL; and very high, ≥190 mg/dL. Among non-Hispanic whites living in the United States, 17% of women and 20% of men have LDL cholesterol levels >160 mg/dL. Corresponding estimates for non- Hispanic blacks are 19% of women and 19% of men, and for Mexican Americans, 14% of women and 17% of men.

Current recommendations for LDL cholesterol goals depend on the estimated 10-year risk of developing CVD and the presence of CVD-related risk factors. Although drug therapy is often prescribed for those at moderate or high risk, dietary changes are recommended for all individuals. The strongest dietary determinants of elevated LDL cholesterol concentrations are dietary saturated fatty acid and trans fatty acid intakes. Trans fatty acids tend to increase LDL cholesterol levels slightly less than saturated fatty acids, whereas saturated fatty acids increase HDL cholesterol concentrations but trans fatty acids do not. To a lesser extent, dietary cholesterol and excess body weight are positively related to levels of LDL cholesterol.

HDL cholesterol and triglycerides are other plasma lipid measures related to CVD risk that can be affected by diet and body weight. The concentration of HDL cholesterol is inversely associated with the risk of developing CVD. This association is thought to be mediated by a constellation of events collectively referred to as reverse cholesterol transport- the transport of cholesterol from peripheral tissues to the liver for subsequent metabolism or excretion. HDL directly protects against the development of atherosclerosis. The major nongenetic determinants of low HDL cholesterol levels are hyperglycemia, diabetes, hypertriglyceridemia, very low-fat diets (<15% energy as fat), and excess body weight. Although at this time there are no HDL cholesterol goals as there are for LDL cholesterol, levels <50 mg/dL in women and <40 mg/dL in men are considered one of the criteria for the classification of metabolic syndrome. Likewise, although at this time there are no triglyceride goals, levels >150 mg/dL are considered one of the criteria for the classification of metabolic syndrome. In general, a moderate inverse relationship exists between triglyceride and HDL cholesterol concentrations, and determinants of high triglycerides are mainly the same as those of low HDL cholesterol.

Aim for a Normal Blood Pressure

A normal BP is a systolic BP < 120 mm Hg and a diastolic BP < 80 mm Hg. BP is a strong, consistent, continuous, independent, and etiologically relevant risk factor for cardiovascular- renal disease. Notably, no evidence of a BP threshold exists—that is, the risk of CVD increases progressively throughout the range of BP, including the prehypertensive range (a systolic BP of 120 to 139 mm Hg or diastolic BP of 80 to 89 mm Hg). Hence, efforts to reduce BP to normal levels are warranted, even among individuals with prehypertension. According to the most recent National Health and Nutrition Examination Survey (NHANES) (1999 –2000), 27% of adult Americans have hypertension (systolic BP ≥140 mm Hg, diastolic BP ≥90 mm Hg, or use of antihypertensive medication), and another 31% have prehypertension. It has been estimated that among adults >50 years of age, the lifetime risk of developing hypertension approaches 90%. On average, blacks have higher BP than do nonblacks, as well as an increased risk of BP-related complications.

Elevated BP results from environmental factors, genetic factors, and interactions among these factors. Of the environmental factors that affect BP (ie, diet, physical inactivity, toxins, and psychosocial factors), dietary factors have a prominent, and likely predominant, role. A substantial body of evidence strongly supports the concept that multiple dietary factors affect BP. Dietary modifications that lower BP are reduced salt intake, caloric deficit to induce weight loss, moderation of alcohol consumption (among those who drink), increased potassium intake, and consumption of an overall healthy diet, based on the DASH (Dietary Approaches to Stop

Hypertension) diet. The latter is a carbohydrate-rich diet that emphasizes fruits, vegetables, and low-fat dairy products; includes whole grains, poultry, fish, and nuts; and is reduced in fats, red meat, sweets, and sugar-containing beverages. Replacement of some carbohydrates with either protein from plant sources or with monounsaturated fat can further lower BP.

Aim for a Normal Blood Glucose Level

A normal fasting glucose level is ≤ 100 mg/dL, whereas diabetes is defined by a fasting glucose level ≥ 126 mg/dL. Hyperglycemia and the often-associated insulin resistance are related to numerous cardiovascular complications, including CHD, stroke, peripheral vascular disease, cardiomyopathy, and heart failure. Type 2 diabetes is the most common form of diabetes. Reducing caloric intake and increasing physical activity to achieve even a modest weight loss can decrease insulin resistance and improve glucose control and the concomitant metabolic abnormalities. In nondiabetic individuals, weight loss and increased physical activity can delay the onset of and possibly prevent diabetes.

Be Physically Active

Regular physical activity is essential for maintaining physical and cardiovascular fitness, maintaining healthy weight, and sustaining weight loss once achieved. Current estimates indicate that 61% of US adults do not engage in any regular physical activity. A sedentary lifestyle is associated with older age and is more common among Hispanic or Latino and black adults than among white adults. Regular physical activity improves cardiovascular risk factors (BP, lipid profiles, and blood sugar) and lowers the risk of developing other chronic diseases, including type 2 diabetes, osteoporosis, obesity, depression, and cancer of the breast and colon.

Avoid Use of and Exposure to Tobacco Products

On the basis of the overwhelming evidence for the adverse effects of tobacco products and secondary exposure to tobacco smoke on CVD, as well as cancer and other serious illness, the AHA strongly and unequivocally endorses efforts to eliminate the use of tobacco products and minimize exposure to second-hand smoke. Nearly 23% of US adults smoke, with the highest rates in American Indian/ Alaskan Native women (37%) and the lowest rates in Asian women (7%). Because cessation of smoking in habitual smokers can be associated with weight gain, particular attention should be given to preventing this outcome. Concern about weight gain should not be a reason for continued use of tobacco products.

AHA DIET AND LIFESTYLE RECOMMENDATIONS

The AHA 2006 Diet and Lifestyle Recommendations (Table 2) are intended to reduce CVD risk. These recommendations are intentionally presented in a manner that allows maximal flexibility in their implementation among a group of individuals with a wide range of dietary preferences and to meet the unique needs for growth, development, and aging. Practical approaches for implementing these recommendations are presented in Table 3. Two examples of eating patterns at 2000 calories per day that meet the AHA 2006 Diet and Lifestyle Recommendations are presented in Table 4. The 2 examples provide a general framework to aid health practitioners in giving general, practical food-group- based guidance.

Balance Calorie Intake and Physical Activity to Achieve or Maintain a Healthy Body Weight

To avoid weight gain after childhood, individuals must control calorie intake so that energy balance is achieved-that is, energy intake matches energy expenditure. To control calorie intake, individuals should increase their awareness of the calorie content of foods and beverages per portion consumed and should control portion size. The

TABLE 3. Practical Tips to Implement AHA 2006 Diet and Lifestyle Recommendations

Lifestyle

- Know your caloric needs to achieve and maintain a healthy weight.
- Know the calorie content of the foods and beverages you consume.
- Track your weight, physical activity, and calorie intake.
- Prepare and eat smaller portions.
- Track and, when possible, decrease screen time (eg, watching television, surfing the Web, playing computer games).
- Incorporate physical movement into habitual activities.
- Do not smoke or use tobacco products.
- If you consume alcohol, do so in moderation (equivalent of no more than 1 drink in women or 2 drinks in men per day).

Food choices and preparation

- Use the nutrition facts panel and ingredients list when choosing foods to buy.
- Eat fresh, frozen, and canned vegetables and fruits without high-calorie sauces and added salt and sugars.
- Replace high-calorie foods with fruits and vegetables.
- Increase fiber intake by eating beans (legumes), whole-grain products, fruits, and vegetables.
- Use liquid vegetable oils in place of solid fats.
- Limit beverages and foods high in added sugars. Common forms of added sugars are sucrose, glucose, fructose, maltose, dextrose, corn syrups, concentrated fruit juice, and honey.
- Choose foods made with whole grains. Common forms of whole grains are whole wheat, oats/oatmeal, rye, barley, corn, popcorn, brown rice, wild rice, buckwheat, triticale, bulgur (cracked wheat), millet, quinoa, and sorghum.
- Cut back on pastries and high-calorie bakery products (eg, muffins, doughnuts).
- Select milk and dairy products that are either fat free or low fat.
- Reduce salt intake by
  -comparing the sodium content of similar products (eg, different brands of tomato sauce) and choosing products with less salt;
  - choosing versions of processed foods, including cereals and baked goods, that are reduced in salt; and
  - limiting condiments (eg, soy sauce, ketchup).
- Use lean cuts of meat and remove skin from poultry before eating.
- Limit processed meats that are high in saturated fat and sodium.
- Grill, bake, or broil fish, meat, and poultry.
- Incorporate vegetable-based meat substitutes into favorite recipes.
- Encourage the consumption of whole vegetables and fruits in place of juices.

macronutrient composition of a diet (ie, the amount of fat, carbohydrate, and protein) has little effect on energy balance unless macronutrient manipulation influences total energy intake or expenditure. While reducing caloric intake, individuals should adopt and maintain a diet consistent with recommendations in this document (Table 2). A physically active lifestyle is recommended to reduce risk for CVD in all individuals, regardless of body weight. Regular physical activity also reduces symptoms in patients with established CVD. Among individuals who are overweight or obese, regular physical activity along with calorie restriction is recommended as a means to achieve weight loss. Regular daily physical activity has been shown to be particularly effective in maintaining weight loss once achieved.

AHA recommends that all adults accumulate 30 minutes of physical activity most days of the week. Additional benefits will likely be derived if activity levels exceed this minimum recommendation. At least 60 minutes of physical activity most days of the week is recommended for adults who are attempting to lose weight or maintain weight loss and for children. The physical activity can be accumulated throughout the day. It is not easy for individuals to achieve these goals. However, it is important to encourage behaviors that will facilitate achieving and maintaining these goals over time. Achieving a physically active lifestyle requires effective time management, with a particular focus on reducing sedentary activities such as screen time (eg, watching television, surfing the Web, playing computer games) and making daily choices to move rather than be moved (eg, taking the stairs instead of the elevator).

Consume a Diet Rich in Vegetables and Fruits

Most vegetables and fruits are rich in nutrients, low in calories, and high in fiber. Therefore, diets high in vegetables and fruits meet micronutrient, macronutrient, and fiber requirements without adding substantially to overall energy consumption. Whether it is the vegetables and fruits themselves or the absence of other foods displaced from the diet that is associated with CVD risk reduction has yet to be determined. Regardless, diets rich in vegetables and fruits have been shown to lower BP and improve other CVD risk factors in short-term randomized trials. In longitudinal observation studies, persons who regularly consume such diets are at a lower risk of developing CVD, particularly stroke.

A variety of vegetables and fruits are recommended. Vegetables and fruits that are deeply colored throughout (eg, spinach, carrots, peaches, berries) should be emphasized because they tend to be higher in micronutrient content than are other vegetables and fruits such as potatoes and corn. Fruit juice is not equivalent to the whole fruit in fiber content and perhaps satiety value and should not be emphasized. A diet rich in vegetables and fruits is a strategy for lowering the energy density of the diet to control energy intake. Equally important is the method of preparation. Techniques that preserve nutrient and fiber content without adding unnecessary calories, saturated or trans fat, sugar, and salt are recommended (Table 3).

Choose Whole-Grain, High-Fiber Foods

Dietary patterns that are high in whole-grain products and fiber have been associated with increased diet quality and decreased risk of CVD. Soluble or viscous fibers (notably β-glucan and pectin) modestly reduce LDL cholesterol levels beyond those achieved by a diet low in saturated and trans fatty acids and cholesterol alone. Insoluble fiber has been associated with decreased CVD risk and slower progression of CVD in high-risk individuals. Dietary fiber may promote satiety by slowing gastric emptying, leading to an overall decrease in calorie intake. Soluble fiber may increase short-chain fatty acid synthesis, thereby reducing endogenous cholesterol production. The AHA recommends that at least half of grain intake come from whole grains.

TABLE 4. Two Examples of Daily Dietary Patterns That Are Consistent With AHA-Recommended Dietary Goals at 2000 Calories

Eating Pattern	DASH	TLC	Serving Sizes
Grains	6 to 8 servings per day	7 servings per day	1 slice bread; 1 oz dry cereal $^1/_2$ cup cooked rice, pasta, or cereal
Vegetables	4 to 5 servings per day	5 servings per day	1 cup raw leafy vegetable, $^1/_2$ cup cut-up raw or cooked vegetable, $^1/_2$ cup vegetable juice
Fruits	4 to 5 servings per day	4 servings per day	1 medium fruit; 1/4 cup dried fruit; $^1/_2$ cup fresh, frozen, or canned fruit; $^1/_2$ cup fruit juice
Fat-free or low-fat milk and milk products	2 to 3 servings per day	2 to 3 servings per day	1 cup milk, 1 cup yogurt, $1^1/_2$ oz cheese
Lean, meats, poultry, and fish	< 6 oz per day	≤ 5 oz per day	
Nuts, seeds, and legumes	4 to 5 servings per week	Counted in vegetable servings.	1/3 cup ($1^1/_2$ oz), 2 Tbsp peanut butter, 2 Tbsp or $^1/_2$ oz seeds, $^1/_2$ cup dry beans or peas
Fats and oils	2 to 3 servings per day	Amount depends on daily calorie level	1 tsp soft margarine, 1 Tbsp mayonnaise, 2 Tbsp salad dressing, 1 tsp vegetable oil
Sweets and added sugars	5 or fewer servings per week	No recommendation	1 Tbsp sugar, 1 Tbsp jelly or jam, $^1/_2$ cup sorbet and ices, 1 cup lemonade

Consume Fish, Especially Oily Fish, at Least Twice a Week

Fish, especially oily fish, is rich in very long-chain omega-3 polyunsaturated fatty acids: eicosapentaenoic acid, C20:5n-3 (EPA) and docosahexaenoic acid,

C22:6n-3 (DHA). The consumption of 2 servings (≈8 ounces) per week of fish high in EPA and DHA is associated with a reduced risk of both sudden death and death from coronary artery disease in adults. In addition to providing EPA and DHA, regular fish consumption may facilitate the displacement of other foods higher in saturated and trans fatty acids from the diet, such as fatty meats and full-fat dairy products. Methods used to prepare fish should minimize the addition of saturated and trans fatty acids, as occurs with the use of cream sauces or hydrogenated fat during frying.

Limit Your Intake of Saturated and Trans Fat and Cholesterol

As a set of goals, the AHA recommends intakes of ≈<7% of energy as saturated fat, <1% of energy as trans fat, and ≈<300 mg cholesterol per day. These goals can be achieved by (1) choosing lean meats and vegetable alternatives; (2) selecting fat-free (skim), 1%-fat, and low-fat dairy products; and (3) minimizing intake of partially hydrogenated fats. Diets low in saturated and trans fatty acids and cholesterol reduce the risk of CVD, in large part through their effects on LDL cholesterol levels. For all age groups of the US population, in 1999 to 2000, the daily mean percentage of calories from saturated fats was 11.2. In those same years, average cholesterol intakes for men and women ages 20 to 74 years were 341 mg and 242 mg, respectively. The mean trans fatty acid intake has been estimated to be ≈2.7% of energy. This number should only be considered a crude estimate because it is likely current intakes are shifting, in part prompted by the new trans fatty acid labeling requirement. Subgroups within the population are likely to have higher or lower intakes based on their habitual dietary practices.

≈≈≈In the current US diet, the major sources of saturated fatty acids are animal fats (meat and dairy), and the primary sources of trans fatty acids are partially hydrogenated fats used to prepare commercially fried and baked products. Major sources of dietary cholesterol are foods of animal origin (eggs, dairy, and meat). Saturated and trans fatty acid intakes are directly related to LDL cholesterol levels. Increased dietary cholesterol intake also raises LDL cholesterol concentrations.

≈≈Efforts to reduce saturated fat and cholesterol typically rely on replacement of animal fats with unsaturated fats (polyunsaturated and monounsaturated fats) and on selection of lower-fat versions of foods (eg, replacing full-fat dairy products with nonfat or low-fat versions). Replacing meats with vegetable alternatives (eg, beans) or fish is one strategy to replace saturated fats with unsaturated fats and reduce the cholesterol content. In view of the positive linear relationship among dietary saturated fat, LDL cholesterol, and CVD risk, and current US intakes, the AHA now recommends a population-wide goal of ≈<7% of energy.

≈≈Efforts to reduce trans fatty acids typically rely on the substitution of partially hydrogenated fats with those made with liquid vegetable oils (with the exception of tropical fats). With the introduction of mandatory trans fat labeling on January 1, 2006, it is easier for consumers to identify and limit their trans fatty acid intake. However, even if partially hydrogenated fats were removed from the food supply, it is estimated that trans fats still would represent ≈1% of the calories because some trans fatty acids are produced from deodorization of vegetable oils and because meat and dairy products contain naturally occurring trans fatty acids.

≈≈≈There are currently no numerical goals for trans fat. The Institute of Medicine recommends limiting trans fat intake as much as possible, and both the 2005 Dietary Guidelines Advisory Committee and a recent FDA Food Advisory Committee, Nutrition Subcommittee, recommended that the intake of trans fat be ≤≈1% of energy. (The FDA subcommittee voted [6 yes, 1 abstaining] in favor of the recommendation.) For this reason, the AHA recommends the goal of a diet containing <1% trans fatty acids.

≈≈ The relative health effects of polyunsaturated and monounsaturated fats are actively debated. A few clinical outcome trials have documented that replacement of saturated fat with polyunsaturated fats reduces the risk of developing CHD, whereas prospective observational studies have documented that diets rich in monounsaturated fats are associated with a reduced risk of CHD. The AHA supports the recommendations of the Institute of Medicine and the National Cholesterol Education Program for total fat. A range of 25% to 35% for total fat is an appropriate level of intake in a healthy dietary pattern.

Minimize Your Intake of Beverages and Foods With Added Sugars

Over the past few decades, the consumption of beverages and foods with added sugars has risen markedly. The intake of added sugars (sucrose, corn syrup, and high-fructose corn syrup) increased from 13.1% of energy during the period 1977 to 1978 to 16.6% of energy during 1999 to 2002. The primary reasons for reducing the intake of beverages and foods with added sugars are to lower total calorie intake and promote nutrient adequacy. Individuals who consume large amounts of beverages with added sugars tend to consume more calories and gain weight. Some evidence suggests that calories consumed as liquid are not as satiating as calories consumed as solid food. This factor may negatively affect attempts to achieve and maintain a healthy body weight.

Choose and Prepare Foods With Little or No Salt

On average, as salt (sodium chloride) intake increases, so does BP. A reduced sodium intake can prevent hypertension in nonhypertensive individuals, can lower BP in the setting of antihypertensive medication, and can

facilitate hypertension control. A reduced sodium intake is associated with a blunted age-related rise in systolic BP and a reduced risk of atherosclerotic cardiovascular events and congestive heart failure. In general, the effects of sodium reduction on BP tend to be greater in blacks; middle-aged and older-aged persons; and individuals with hypertension, diabetes, or chronic kidney disease (CKD). Diets rich in potassium lower BP and also blunt the BP-raising effects of an increased sodium intake. Because of the progressive dose-response relationship between sodium intake and BP, it is difficult to set a recommended upper level of sodium intake, which could be as low as 1.5 g/d (65 mmol/d). However, in view of the available high-sodium food supply and the currently high levels of sodium consumption, a reduction in sodium intake to 1.5 g/d (65 mmol/d) is not easily achievable at present. In the interim, an achievable recommendation is 2.3 g/d (100 mmol/d).

WHEN YOU EAT FOOD THAT IS PREPARED OUTSIDE OF THE HOME, FOLLOW THE AHA 2006 DIET AND LIFESTYLE RECOMMENDATIONS

Increasingly, Americans consume food that is prepared outside of the home. Such types of "away" food include food prepared at restaurants and grocery stores, quick-serve establishments, schools and daycare centers, and other non-home locations. Between 1977 to 1978 and 1994 to 1996, consumption of away food increased from 18% to 32% of calories. Large portion sizes and high energy density are common features of away food. Many types of away foods, particularly traditional quick-serve, are also high in saturated fat, trans fatty acids, cholesterol, added sugars, and sodium and low in fiber and micronutrients. Adverse health consequences have emerged. There is a positive association between frequency of meal consumption at quick-serve restaurants and total energy intake, weight gain, and insulin resistance. Attainment of a healthy diet will require individuals to make wise choices when they eat food prepared outside of the home.

OTHER DIETARY FACTORS THAT AFFECT CVD RISK

Fish Oil Supplements

Fish intake has been associated with decreased risk of CVD. On the basis of the available data, the AHA recommends that patients without documented CHD eat a variety of fish, preferably oily fish, at least twice a week. Patients with documented CHD are advised to consume ≈1 g of EPA DHA per day, preferably from oily fish, although EPA+DHA supplements could be considered in consultation with their physician. For individuals with hypertriglyceridemia, 2 to 4 g of EPA+DHA per day, provided as capsules under a physician's care, are recommended.

ENVIRONMENTAL INFLUENCES ON CVD HEALTH BEHAVIORS

Environmental factors that contribute to excess calorie intake are increased portion sizes, high-calorie foods, and easy access to plentiful inexpensive food. Environmental factors that discourage physical activity include an environment that encourages automobile use rather than walking and that has few cues to promote activity and numerous cues that discourage activity (eg, poor pedestrian infrastructure, lack of sidewalks and other safety features, and poor street aesthetics). Other factors include reduced energy expenditures at school, work, and home, and increased time spent on sedentary activities such as watching television, using computers, and playing video games. The effects of environmental factors and of individual nutrients and food groups on overweight and obesity (eg, role of fat, added sugars, alcohol, fruits and vegetables, dairy products, physical inactivity) have been explored. No one factor appears responsible for the epidemic. Such findings reinforce the belief that multiple factors are responsible for the obesity epidemic and that the optimal strategy to arrest the epidemic will be multifactorial. Because many of these factors are beyond the control of individuals (eg, size of portions served in restaurants, lack of information on calorie content at point of purchase, presence of sidewalks, adequate streetlights after dark), substantial changes to the environment will be required. Furthermore, the obesity epidemic highlights the importance of primary prevention efforts in children so that adverse diet and lifestyle behaviors do not become habits. For individuals to adhere to a healthy diet and lifestyle, the AHA Nutrition Committee strongly believes that substantial changes to the environment must occur.

Conclusions

A substantial and expanding body of evidence has implicated several aspects of diet in the pathogenesis of CVD and its risk factors. Importantly, lifestyle modifications can effectively Lichtenstein et al AHA 2006 Diet and Lifestyle Recommendations control CVD risk factors and lower CVD risk. To realize these benefits, individuals should aim for a desirable body weight, be physically active, avoid tobacco exposure, and follow a diet and lifestyle consistent with AHA dietary recommendations as stated in this report. Accomplishing these objectives will require individuals to change their behavior and society to make substantial environmental changes. The current challenge to healthcare providers, researchers, and government officials is to develop and implement effective clinical and public health strategies that lead to sustained lifestyle changes among individuals and, more broadly, among populations.

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Cardiology News

Walnuts protect arteries from effects of fatty foods

Eating walnuts can reverse the impairment of endothelial function associated with eating a fatty meal. But olive oil did not have the same beneficial effect. While eating a fatty meal, inflammatory molecules are increased that prevent the endothelium from producing nitric oxide, which thus leads to endothelial dysfunction. Eating a handful of walnuts prevented the increase in the inflammatory substances and the endothelial dysfunction, whereas olive oil prevented the increase in inflammatory molecules but did not prevent the endothelial dysfunction associated with eating fatty food. Olive oil does have some beneficial effects--it is not bad, but walnuts are better. While walnut oil would probably also be somewhat beneficial, eating the nuts themselves was a better option, as the oil does not contain all the beneficial components. Researchers recommend that people should eat a handful of walnuts every day-about six to eight nuts.

J Am Coll Cardiol 2006; 48:1666-1671.

Psoriasis an independent risk factor for MI

Patients with psoriasis, especially those with a severe case of the autoimmune disorder, have a significantly increased risk of MI independent of traditional CV risk factors, according to a population-based case-control study. The relative risk was highest in younger people, and as they got older, the risk seemed to go down-to close to baseline by the time they reached their 70s. Psoriasis patients were significantly more likely to have diabetes, dyslipidemia, and hypertension and to be male and smokers. But their incidence of MI during follow-up was significantly increased compared with controls independently of the CV risk factors and was highest among those with severe disease. The findings are a reminder for physicians who see patients with psoriasis that they need to screen them for cardiovascular risk factors.

Journal of the American Medical Association. October 11, 2006

Isoprostanes may predict gestational hypertension

Plasma and urinary markers of oxidative stress during mid-pregnancy appear to be associated with subsequent gestational hypertension and pre-eclampsia. Researchers sought to assess the predictive value of the 8-epimer of prostaglandin (8-isoPG) F2alpha and mean arterial pressure (MAP) in selected singleton women attending an antenatal clinic. The researchers conclude that plasma 8-isoPGF2alpha appears to be a very good predictor of subsequent gestational hypertension and pre-eclampsia when measured at 24 to 32 weeks of gestation. However, they conclude, its ability to discriminate deteriorates as pregnancy advances.

BJOG 2006;113:1053-1059.

Anabolic hormone deficiencies with HF

Many men with systolic heart failure have deficiencies in certain anabolic hormones that are associated with significantly increased mortality independent of NYHA class and other risk markers, according to an observational study. The finding suggests a potential for measurements of serum testosterone, dehydroepiandrosterone sulfate (DHEAS), and insulin like growth factor-1 (IGF-1) to sharpen HF risk assessments based on standard predictors and raises the possibility of anabolic-hormone deficiencies as potential treatment targets. The investigators showed "strong associations" between the hormone deficiencies and HF status, but whether they are really independent of NYHA class and other standard risk criteria remains an open question.

Circulation. October, 2006

Editorial Note

Dear Doctor
We are happy to present the 7th issue of *"Insight Heart"*. It is a small endeavor to provide you compiled & updated information on cardiovascular diseases and its management. This issue is focused on *"Diet and Lifestyle Recommendations Revision 2006"*. We will appreciate your thoughtful comments to enrich the publication.
Thanks and regards.