

EVIDENCE-STATEMENT: HEALTHY DIET (Counseling)

Why This Chapter is
Important for
Employers:
An Overview

- Four of the 10 leading causes of death in the United States — coronary heart disease, some types of cancer, stroke, and type 2 diabetes — are associated with an unhealthy diet.¹ More than half of all deaths in 1994 were attributable to these four diseases.
- Diet also contributes significantly to the development of high cholesterol, high blood pressure, and overweight. These health conditions are associated with considerable medical expenses, disability, and premature deaths.²
- The total cost attributable to diet-associated coronary heart disease, cancer, stroke, and diabetes is estimated to be \$70.9 billion (in year 1995 dollars).^{2,3} Direct medical costs account for nearly half (47%) of this total; premature deaths account for 39% and lost productivity accounts for 13% of the remainder.^{2,3} Diet-related osteoporosis and hip fractures cost an additional \$5.1 to \$10.6 billion each year (in year 1995 dollars).⁴

Clinical Preventive Service Recommendations

U.S. Preventive
Services Task Force
Recommendation

The U.S. Preventive Services Task Force recommends intensive behavioral dietary counseling for adults with hyperlipidemia (lipid disorders) and other known risk factors for cardiovascular and diet-related chronic diseases. Intensive counseling can be delivered by primary care clinicians or specialists such as nutritionists and dietitians.³

Evidence Rating: B
(Recommended/
At Least Fair
Evidence)

The USPSTF found good evidence that medium- to high-intensity counseling interventions can produce medium to large changes in average daily intake of the core components of a healthy diet (including reduced consumption of saturated fat and increased consumption of fiber, fruits, and vegetables) in adult patients at increased risk of diet-related chronic diseases.³

Controlled clinical trials have assessed intensive counseling interventions for at-risk adult patients. The trials involved combined nutrition education with behavioral dietary counseling provided by a nutritionist, dietitian, or specially trained primary care clinician. The USPSTF concluded that such counseling is likely to improve important health outcomes and that its benefits outweigh its potential harms. No controlled trials of intensive counseling in children or adolescents were identified that measure effective dietary counseling in the primary care setting.³

Other Recommended
Guidance

Dietary guidelines for the general population have been issued by the U.S. Department of Agriculture and the Department of Health and Human Services⁵ and specific dietary objectives for the nation are outlined in *Healthy People 2010*.⁶ Guidelines from the American Heart Association⁷ address diets that lower the risks for heart disease, and the American Cancer Association⁸ has issued guidelines on diet and cancer. All of these agencies and organizations recommend a diet that includes a variety of fruits, vegetables, and grains; is low in saturated fat and cholesterol and moderate in total fat; and balances calories with physical activity to maintain a healthy weight.

Several groups have recommended nutritional counseling or dietary advice for

patients at average risk of chronic disease, including the American College of Preventive Medicine (ACPM), American Academy of Family Physicians (AAFP), American Academy of Pediatrics (AAP), and American College of Obstetricians and Gynecologists (ACOG).⁹⁻¹² These recommendations are based primarily on the benefits of a healthy diet rather than on evaluations of counseling efficacy.¹³

Recommendations on nutritional counseling for patients at risk of diet-related chronic diseases (e.g., persons with hypertension or hyperlipidemia) have been issued by the American Dietetic Association and two panels sponsored by the National Heart, Lung and Blood Institute (NHLBI). The American Dietetic Association recommends that primary care providers screen all patients for nutrition-related illnesses and, for patients with positive screening results, prescribe diets, provide preliminary counseling on specific nutritional needs, follow up with the patients, and refer them to appropriate dietetic professionals when necessary.¹⁴ Similarly, the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure recommends that dietary assessments be included in routine medical histories and that patients at risk of diet-related chronic diseases should be counseled about lifestyle modifications to prevent and treat high blood pressure; the lifestyle changes emphasize weight loss for those overweight, limiting alcohol intake, reducing sodium consumption, and reducing intake of saturated fat and cholesterol.¹⁵ The National Cholesterol Education Program (NCEP) recommends that persons with elevated levels of low-density lipoprotein limit their intake of fats, particularly saturated fats and cholesterol, and increase their intake of dietary fiber.¹⁶

Information Sources

The recommendations and supporting information contained in this document came from several sources, including the:

- American Academy of Family Physicians (AAFP)
- American Academy of Pediatrics (AAP)
- American College of Obstetricians and Gynecologists (ACOG)
- American College of Preventive Medicine (ACPM)
- American Dietetic Association
- American Heart Association (AHA)
- *Healthy People 2010*
- Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure
- National Cancer Institute (NCI)
- National Cholesterol Education Program (NCEP)
- National Institutes of Health (NIH)
- National Heart, Lung, and Blood Institute (NHLBI)
- Peer-reviewed Research
- U.S. Department of Agriculture (USDA)
- U.S. Department of Health and Human Services (USDHHS)
- U.S. Preventive Services Task Force (USPSTF)

Epidemiology of
Condition/Disease

The background and supporting information in this document is based on a compilation of research findings. All information presented in this document should be attributed to its referenced source and should not be considered a reflection of the opinions of other organizations cited in the text.

Condition/Disease-Specific Information

Epidemiology of
Condition/Disease

The relationship between dietary patterns and health outcomes has been examined in a wide range of observational studies and randomized trials with patients at risk of diet-related chronic disease. The majority of these studies have shown that people who consume diets that are low in fat, saturated fat, trans-fatty acids, and cholesterol and high in fruits, vegetables, and whole-grain products containing fiber have lower rates of morbidity and mortality from coronary heart disease and, possibly, several forms of cancer than those who consume unhealthy diets.¹⁷ In fact, 4 of the 10 leading causes of death — coronary heart disease, some types of cancer, stroke, and type 2 diabetes — are associated with unhealthy diets.¹

Lipid Disorders

Nearly 107 million American adults (50.7% of the adult population) have a total blood cholesterol value of 200 mg/dl or above, and 37.7 million of these adults (18.3%) have a total blood cholesterol level of 240 mg/dl or above.¹⁸ A reading of less than 200 mg/dl is considered desirable and a reading of 240 mg/dl or more is considered high.

Obesity

Obesity is epidemic in the United States. Between 1976 to 1980 and 1999 to 2002, the proportion of obese adults doubled, the proportion of overweight children (aged 6 to 11) doubled, and the proportion of overweight adolescents (aged 12 to 19) tripled.¹⁹ Approximately half to two-thirds of obese adults have diabetes, high blood pressure, coronary artery disease, high cholesterol, or a combination of these conditions.²⁰

Both lipid disorders and obesity are risk factors for cardiovascular diseases, including coronary heart disease and coronary artery disease.

Cardiovascular Disease

Coronary heart disease, a cardiovascular disease, is caused by arteriosclerosis (a thickening or hardening of the arteries) and can lead to angina pectoris (heart pain), heart attack, or both. An estimated 1.5 million adults have a heart attack each year in the United States. The American Heart Association estimates that 13.9 million adults have a history of coronary heart disease and about every minute, someone dies from a heart attack.¹⁸ Arteriosclerosis is particularly sensitive to lipid levels.

Alcohol and caffeine use and insufficient calcium or vitamin D intake are also risk factors for osteoporosis. Please refer to the *Osteoporosis Screening and Treatment Evidence-Statement* for additional information.

Cancer

The American Cancer Society estimates that almost 1.4 million new cases of cancer will develop in 2006.⁸ About one-third of the 564,830 deaths expected to result from cancer in 2006 are related to diet, physical inactivity, and overweight or obesity and are thus preventable.⁸

To reduce the risk of morbidity and mortality from coronary heart disease and to maintain a healthy weight, it is necessary to eat a healthy diet and to balance calories consumed with physical activity.³ A healthy eating plan is one that emphasizes fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products; includes lean meats, poultry, fish, beans, eggs, and nuts; is low in saturated fats, *trans*-fats, cholesterol, salt (sodium), and added sugars; and balances caloric intake with caloric needs. The Federal publication, *Nutrition and Your Health: Dietary Guidelines for Americans* provides a good source of dietary advice²¹:

- Consume a variety of nutrient-dense foods and beverages within and among the basic food groups while choosing foods that limit the intake of saturated and *trans*-fats, cholesterol, added sugars, salt, and alcohol.
- Meet recommended intake of calories within energy needs by adopting a balanced eating pattern, such as the U.S. Department of Agriculture's Food Guide or the Dietary Approaches to Stop Hypertension (DASH) eating plan.
- Maintain a diet with less than 10% of calories from saturated fat, no more than 30% of calories from total fat, and limited consumption of trans-fatty acids.

Condition/Disease
Risk Factors

Consuming a healthy diet is associated with a reduced risk of chronic disease morbidity and mortality.

Value of Prevention

Economic Burden of
Condition/Disease

Unhealthy diets contribute to several diseases that impose a heavy economic burden on employers and employees.

The total cost attributable to diet-associated coronary heart disease, cancer, stroke, and diabetes is estimated to be \$70.9 billion (in year 1995 dollars).^{2,3} Direct medical costs account for nearly half (47%) of this total; premature deaths account for 39% and lost productivity accounts for 13% of the remainder.^{2,3} Diet-related osteoporosis and hip fractures cost an additional \$5.1 to \$10.6 billion each year (in year 1995 dollars).⁴

Workplace Burden of
Condition/Disease

Productivity losses due to unhealthy diet-associated morbidity from coronary heart disease, cancer, stroke, and diabetes cost \$9.3 billion (in 1995 dollars) per year.^{2,3}

The cost to employers of obesity-related health problems in 1994 was \$13 billion per year, including \$8 billion in medical claims, \$2.4 billion in paid sick leave, \$1.8 billion in life insurance, and almost \$1 billion in disability insurance.²² In addition, an estimated 39 million workdays are lost to obesity-related illnesses each year.²³

<p>Economic Benefit of Preventive Intervention</p>	<p>A randomized controlled trial of a low-cost healthy nutrition education program in the California Public Employee's Retirement System found a cost savings of 20% over 12 months.²⁴</p> <p>The Massachusetts Dietetic Association found that diet modification and counseling for hypercholesterolemia by a registered dietitian saved an estimated \$1,300 per patient, per year.²⁵</p>
<p>Estimated Cost of Preventive Intervention</p>	<p>In 2004, the private-sector cost of preventive medicine counseling by a physician averaged \$39 per session; approximately 95% of all paid claims fell within the range of \$0 to \$129 per session.²⁶ Nutritional counseling by a dietician averaged \$61 per session and approximately 95% of all paid claims fell within the range of \$0 to \$150 per session.²⁶</p>
<p>Cost-Effectiveness and/or Cost-Benefit Analysis of Preventive Intervention</p>	<p>Nutrition education from the expanded Food and Nutrition Education Program, administered by the U.S. Department of Agriculture, helps limited-resource populations acquire the knowledge, skills, and attitudes, and make the behavior changes necessary for nutritionally sound diets. The benefit-to-cost ratio of \$10.64/\$1.00 for a Food and Nutrition Education Program in Virginia²⁷ and \$10.75/\$1.00 in Iowa²⁸ shows that nutrition counseling can produce a significant return-on-investment (ROI).</p> <p>Another study found that an intensive nutrition intervention in patients with type 2 diabetes had a cost-effectiveness ratio of \$4.20, while the cost-effectiveness ratio of usual nutrition care was \$5.32.²⁹⁻³⁰</p> <p>Some evidence indicates that lifestyle interventions may be more cost-effective than drug treatments for some diet-related chronic illnesses.³¹</p>

Preventive Intervention Information

<p>Preventive Intervention: Purpose of Screening</p>	<p>Behavioral counseling can help persons at high risk of cardiovascular disease and other diet-related chronic diseases improve their diets and thereby reduce their risk of the poor outcomes and complications associated with obesity, lipid disorders, and coronary heart disease.³</p>
<p>Benefits and Risks of Intervention</p>	<p>Medium- to high-intensity behavioral interventions appear to produce consistent, sustained, and clinically important changes in dietary intake of total fat, saturated fat, fruits, vegetables, and fiber.³ It is important to note that the studies supporting these benefits were conducted in patients with known risk factors for diet-related chronic disease or in special clinics with select patients and specially trained providers. The most effective interventions generally combined education, behavior-oriented counseling, patient reinforcement, and follow-up. More intensive interventions and those of longer duration were associated with greater benefits and more sustained changes in diet.³ The largest effects of dietary counseling in asymptomatic adults with hyperlipidemia or hypertension and those at increased risk of diet-related chronic disease have been observed with more intensive interventions (multiple sessions lasting 30 minutes or longer).³</p>

Two other approaches appear promising for adult patients in primary care settings³:

1. Medium-intensity face-to-face dietary counseling (two to three group or individual sessions) delivered by a dietitian or nutritionist or by a specially trained primary care physician or nurse practitioner.
2. Lower intensity interventions that involve 5 minutes or less of counseling by a primary care provider and are supplemented by patient self-help materials, telephone counseling, or other interactive health communications.

However, more research is needed to assess the long-term efficacy of these treatments and to balance the benefits and harms.³

Possible harms of dietary counseling have not been well-defined or measured. Some researchers have suggested that a focus on reducing total fat intake but not reducing caloric intake might lead to an increased intake of carbohydrates (in the form of reduced-fat or low-fat food products), which could result in weight gain, elevated triglyceride levels, or insulin resistance.³

Little is known about effective dietary counseling for children or adolescents in the primary care setting. Most studies of nutritional interventions in these populations have focused on non-clinical settings, such as schools, or have used physiologic outcomes, such as cholesterol level or weight reduction, rather than indicators of a healthy diet, such as intakes of total and saturated fats.³²⁻³³

Initiation, Cessation, and Interval of Counseling

The USPSTF was not able to determine the ideal frequency of counseling. Other research has indicated that intensive counseling (30 to 45 minutes in duration) can reasonably be conducted at baseline, 3 months after the initial intervention, and every 6 months thereafter, as medically indicated. Thus, in any given calendar year, 3 counseling sessions could be provided.³⁴

Intervention Process

Decisions about behavioral counseling should take into account the overall risk for coronary heart disease. Risk assessment should consider age, sex, and the presence and severity of the following risk factors: diabetes, elevated total cholesterol levels, low levels of high density lipoprotein cholesterol, elevated blood pressure, family history (in younger adults), and smoking.³

Effective interventions include individual or group counseling, which can be delivered by nutritionists, dietitians, specially trained primary care practitioners and health educators in the primary care setting, or in other clinical settings by referral.³

Effective interventions combine nutrition education with behavior-oriented counseling to help patients acquire the skills, motivation, and support needed to alter their daily eating and food preparation practices. Examples of behavior-oriented counseling interventions include teaching self-monitoring, training patients to overcome common barriers to selecting a healthy diet, helping patients set their own goals, providing guidance in shopping and food preparation, engaging in role playing with patients, and arranging for social support during treatment. In general, these interventions align with the “5 As”

behavioral counseling framework³⁵:

- **Assess** dietary practices and related risk factors.
- **Advise** patients to change dietary practices.
- **Agree** on individual diet change goals.
- **Assist** patients in changing their dietary practices or addressing motivational barriers.
- **Arrange** regular follow-up and support or refer patients to more intensive behavioral nutritional counseling (e.g., medical nutrition therapy) if needed.^{5,20}

Systems supports (prompts, reminders, and counseling algorithms) for primary care clinicians have been found to significantly improve their delivery of appropriate dietary counseling.³⁶⁻³⁸

Initial assessments and follow-up monitoring can be conducted using any of several brief dietary assessment questionnaires, which have been validated for use in the primary care setting.³⁹ These instruments identify dietary counseling needs, guide interventions, and monitor changes in patients' dietary patterns. Since patients enrolled in diet-change programs may exaggerate their adherence to the programs, clinicians may not wish to rely on brief dietary assessment questionnaires but may find them useful to verify self-reported information.^{21, 40-42}

Treatment
Information

Not Applicable

Strength of Evidence for the Clinical Preventive Service

The level of evidence supporting the recommendations contained in this chapter is described below.

Evidence-Based Research:

U.S. Preventive Services Task Force (USPSTF)

Strength of Evidence: B (Recommended/ At Least Fair Evidence)

- The U.S. Preventive Services Task Force found good evidence to recommend intensive behavioral dietary counseling for adult patients with hyperlipidemia (lipid disorders) and other known risk factors for cardiovascular and diet-related chronic disease. Intensive counseling may be delivered by primary care clinicians or by referral to other specialists, such as nutritionists or dietitians.³

Recommended Guidance:

American Dietetic Association

Strength of Evidence: Not Specified

- The American Dietetic Association recommends that primary care providers screen all patients for nutrition-related illnesses and, for patients with positive screening results, prescribe diets, provide preliminary counseling on specific nutritional needs, follow up with the patients, and refer them to appropriate dietetic professionals when necessary.¹⁴

Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure

Strength of Evidence: Not Specified

- The Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure recommends that dietary assessments be included as part of a routine medical history and that physicians counsel patients on lifestyle modifications for the prevention and treatment of high blood pressure (lose weight if overweight, limit alcohol intake, reduce sodium intake, reduce saturated fat and cholesterol intake).¹⁵

The National Cholesterol Education Program (NCEP)

Strength of Evidence: Not Specified

- The National Cholesterol Education Program recommends that persons with elevated levels of low-density lipoprotein limit their intake of fats, particularly saturated fats, and cholesterol and increase their intake of dietary fiber.¹⁶

Authored by:

Lanza A, Tohill BC, Campbell KP. Healthy diet evidence-statement: counseling. In: Campbell KP, Lanza A, Dixon R, Chattopadhyay S, Molinari N, Finch RA, editors. *A Purchaser's Guide to Clinical Preventive Services: Moving Science into Coverage*. Washington, DC: National Business Group on Health; 2006.

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