

# Behavioral Counseling Interventions to Promote a Healthful Diet and Physical Activity for Cardiovascular Disease Prevention in Adults: U.S. Preventive Services Task Force Recommendation Statement

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**Description:** Update of the 2003 and 2002 U.S. Preventive Services Task Force (USPSTF) recommendation statements on behavioral counseling to promote a healthful diet and physical activity in adults without preexisting cardiovascular disease (CVD) or its risk factors.

**Methods:** The USPSTF reviewed new evidence on whether counseling interventions relevant to primary care for physical activity or a healthful diet modify self-reported behaviors; intermediate physiologic outcomes (for example, reduced lipid levels, blood pressure, weight, and body mass index and increased glucose tolerance); and cardiovascular morbidity and mortality in adults without known CVD, hypertension, hyperlipidemia, or diabetes.

**Population:** General adult population without a known diagnosis of hypertension, diabetes, hyperlipidemia, or CVD.

**Recommendation:** Although the correlation among healthful diet, physical activity, and the incidence of CVD is strong, existing evi-

dence indicates that the health benefit of initiating behavioral counseling in the primary care setting to promote a healthful diet and physical activity is small. Clinicians may choose to selectively counsel patients rather than incorporate counseling into the care of all adults in the general population.

Issues to consider include other risk factors for CVD, a patient's readiness for change, social support and community resources that support behavioral change, and other health care and preventive service priorities.

Harms may include the lost opportunity to provide other services that have a greater health effect.

This is a grade C recommendation.

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\* For a list of the members of the USPSTF, see the **Appendix** (available at [www.annals.org](http://www.annals.org)).

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**T**he U.S. Preventive Services Task Force (USPSTF) makes recommendations about the effectiveness of specific clinical preventive services for patients without related signs or symptoms.

It bases its recommendations on the evidence of both the benefits and harms of the service and an assessment of the balance. The USPSTF does not consider the costs of providing a service in this assessment.

The USPSTF recognizes that clinical decisions involve more considerations than evidence alone. Clinicians should understand the evidence but individualize decision making to the specific patient or situation. Similarly, the USPSTF notes that policy and coverage decisions involve considerations in addition to the evidence of clinical benefits and harms.

## SUMMARY OF RECOMMENDATION AND EVIDENCE

**Population:** General adult population without a known diagnosis of hypertension, diabetes, hyperlipidemia, or cardiovascular disease (CVD).

**Recommendation:** Although the correlation among healthful diet, physical activity, and the incidence of CVD is strong, existing evidence indicates that the health benefit of initiating behavioral counseling in the primary care setting to promote a healthful diet and physical activity is

small. Clinicians may choose to selectively counsel patients rather than incorporate counseling into the care of all adults in the general population.

**Considerations:** Issues to consider include other risk factors for CVD, a patient's readiness for change, social support and community resources that support behavioral change, and other health care and preventive service priorities.

**Potential Harms:** Harms may include the lost opportunity to provide other services that have a greater health effect.

**Grade:** This is a grade C recommendation.

See also:

### Print

Summary for Patients. . . . . I-28

### Web-Only

CME quiz (preview on page I-15)



**Figure. Behavioral counseling interventions to promote a healthful diet and physical activity for cardiovascular disease prevention in adults: clinical summary of U.S. Preventive Services Task Force recommendation.**

**Annals of Internal Medicine**



**BEHAVIORAL COUNSELING INTERVENTIONS TO PROMOTE A HEALTHFUL DIET AND PHYSICAL ACTIVITY FOR CARDIOVASCULAR DISEASE PREVENTION IN ADULTS**

CLINICAL SUMMARY OF U.S. PREVENTIVE SERVICES TASK FORCE RECOMMENDATION

Population	General adult population without a known diagnosis of hypertension, diabetes, hyperlipidemia, or cardiovascular disease (CVD)
Recommendation	<p>Although the correlation among healthful diet, physical activity, and the incidence of CVD is strong, existing evidence indicates that the health benefit of initiating behavioral counseling in the primary care setting to promote a healthful diet and physical activity is small. Clinicians may choose to selectively provide this service to patients rather than incorporating it into the care of all adults in the general population.</p> <p><b>Considerations:</b> Clinicians may consider other risk factors for CVD, patient readiness for change, social support and community resources that support behavioral change, and other health care and preventive service priorities.</p> <p><b>Potential Harms:</b> Harms may include the lost opportunity to provide other services with a greater health effect.</p> <p style="text-align: center;"><b>Grade: C</b></p>
Risk Assessment	If an individual's risk for CVD is uncertain, there are several calculators and models available to quantify a person's 10-year risk for cardiac events, such as the Framingham-based Adult Treatment Panel III calculator (available at <a href="http://hp2010.nhlbi.nih.net/atpIII/calculator.asp">http://hp2010.nhlbi.nih.net/atpIII/calculator.asp</a> ). Generally, persons with a 10-year risk greater than 20% are considered to be high-risk, those with a 10-year risk less than 10% are considered to be low-risk, and those in the 10% to 20% range are considered to be intermediate-risk.
Interventions	Medium- or high-intensity behavioral interventions to promote a healthful diet and physical activity may be provided to individual patients in primary care settings or in other sectors of the health care system after referral from a primary care clinician. In addition, clinicians may offer healthful diet and physical activity interventions by referring the patient to community-based organizations. Strong linkages between the primary care setting and community-based resources may improve the delivery of these services.
Balance of Harms and Benefits	The USPSTF concludes with moderate certainty that medium- or high-intensity primary care behavioral counseling interventions to promote a healthful diet and physical activity have a small net benefit in adult patients without CVD, hypertension, hyperlipidemia, or diabetes.
Other Relevant USPSTF Recommendations	The USPSTF has made recommendations on screening for carotid artery stenosis, coronary heart disease, high blood pressure, lipid disorders, obesity, and peripheral arterial disease. These recommendations are available at <a href="http://www.uspreventiveservicestaskforce.org">www.uspreventiveservicestaskforce.org</a> .

For a summary of the evidence systematically reviewed in making this recommendation, the full recommendation statement, and supporting documents, please go to [www.uspreventiveservicestaskforce.org](http://www.uspreventiveservicestaskforce.org).

See the **Figure** for a summary of the recommendation and suggestions for clinical practice.

**Table 1** describes the USPSTF grades, and **Table 2** describes the USPSTF classification of levels of certainty about net benefit.

**RATIONALE**  
**Importance**

Cardiovascular disease is the leading cause of death in the United States. Adults who adhere to national guidelines for a healthful diet (1) and physical activity (2) have lower cardiovascular morbidity and mortality than those who do not. All persons, regardless of risk status for CVD, can benefit from improved nutrition, healthy eating behaviors, and increased physical activity (1, 2).

**Benefits of Interventions to Change Behavior and Outcomes**

In adult patients without known hypertension, diabetes, hyperlipidemia, or CVD, there is adequate evidence that the benefits of medium- to high-intensity behavioral counseling interventions to improve diet and increase physical activity are small to moderate.

There is adequate evidence that the benefits of medium- to high-intensity behavioral counseling interventions to improve intermediate health outcomes (that is, decreased blood pressure, decreased blood lipid levels, and improved glucose tolerance) are small in the short term (up to 1 year). There is inadequate evidence that medium- to high-intensity behavioral counseling interventions directly decrease rates of mortality or CVD events.

**Table 1. What the USPSTF Grades Mean and Suggestions for Practice**

Grade	Definition	Suggestions for Practice
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer/provide this service.
B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.	Offer/provide this service.
C	<i>Note: The following statement is undergoing revision.</i> The USPSTF recommends selectively offering (or providing) this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.	Offer/provide this service only if other considerations support offering or providing the service in an individual patient.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
I statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.	Read the clinical considerations section of the USPSTF Recommendation Statement. If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

### Harms of Counseling Interventions

There is adequate evidence that intense physical activity is only rarely associated with adverse cardiovascular events. None of the studies reviewed was designed to detect adverse effects of interventions to promote a healthful diet. The USPSTF determined that little to no potential harms are associated with these behavioral counseling interventions.

### USPSTF Assessment

The USPSTF concludes with moderate certainty that medium- or high-intensity behavioral counseling interventions in the primary care setting to promote a healthful diet and physical activity have a small net benefit in adult patients without CVD, hypertension, hyperlipidemia, or diabetes.

## CLINICAL CONSIDERATIONS

### Patient Population Under Consideration

This recommendation applies to adults aged 18 years or older in primary care settings who do not have CVD, hypertension, hyperlipidemia, or diabetes. It does not apply to adults who have known CVD, hypertension, hyperlipidemia, or diabetes. The USPSTF is in the process of updating its recommendation on behavioral counseling interventions for this group.

### Effective Behavioral Counseling Interventions

Studies of medium- and high-intensity behavioral counseling interventions, but not low-intensity interventions, showed beneficial effects on behavioral and intermediate health outcomes (3, 4). The intensity of the intervention was categorized by total patient contact time as low (1 to 30 minutes), medium (31 to 360 minutes), or high (>360 minutes).

In general, low-intensity interventions consisted of only mailed materials or of 1 to 2 single, brief sessions with primary care clinicians or other trained persons. Medium-intensity interventions involved a range of 3 to 24 phone

sessions or 1 to 8 in-person sessions. High-intensity interventions involved a range of 4 to 20 in-person group sessions and were the only interventions to report sustained benefits beyond 12 months.

No high-intensity interventions and few medium-intensity interventions involved primary care clinicians as

**Table 2. USPSTF Levels of Certainty Regarding Net Benefit**

Level of Certainty*	Description
High	The available evidence usually includes consistent results from well-designed, well-conducted studies in representative primary care populations. These studies assess the effects of the preventive service on health outcomes. This conclusion is therefore unlikely to be strongly affected by the results of future studies.
Moderate	The available evidence is sufficient to determine the effects of the preventive service on health outcomes, but confidence in the estimate is constrained by such factors as: the number, size, or quality of individual studies; inconsistency of findings across individual studies; limited generalizability of findings to routine primary care practice; and lack of coherence in the chain of evidence. As more information becomes available, the magnitude or direction of the observed effect could change, and this change may be large enough to alter the conclusion.
Low	The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of: the limited number or size of studies; important flaws in study design or methods; inconsistency of findings across individual studies; gaps in the chain of evidence; findings that are not generalizable to routine primary care practice; and a lack of information on important health outcomes. More information may allow an estimation of effects on health outcomes.

\* The USPSTF defines *certainty* as “likelihood that the USPSTF assessment of the net benefit of a preventive service is correct.” The net benefit is defined as benefit minus harm of the preventive service as implemented in a general primary care population. The USPSTF assigns a certainty level on the basis of the nature of the overall evidence available to assess the net benefit of a preventive service.

the providers of the intervention. Most interventions were delivered by health educators or nurses, counselors or psychologists, dietitians or nutritionists, or exercise instructors or physiologists.

In adults with a diastolic blood pressure of 80 to 89 mm Hg, high-intensity behavioral interventions to reduce dietary sodium content were associated with a clinically significant reduction in blood pressure (decreases of 1.9 mm Hg in systolic blood pressure and 1.0 mm Hg in diastolic blood pressure) and subsequent cardiovascular events (3).

### Other Approaches to Prevention

The counseling interventions that were feasible in the primary care setting or were referable that the USPSTF reviewed demonstrated only small to moderate changes in behavior or intermediate health outcomes. Behavioral counseling may be more effective if delivered in the context of broader public health interventions that encourage healthy lifestyles.

Many public health resources addressing diet and physical activity may be useful resources for primary care clinicians. The U.S. Departments of Agriculture and Health and Human Services have jointly issued dietary guidelines for the general population (1). These guidelines recommend a diet that includes various fruits, vegetables, whole grains, and fiber; is low in saturated fat, cholesterol, and sodium; and balances calories with physical activity to maintain a healthy weight. The “2008 Physical Activity Guidelines for Americans” recommends that adults exercise for at least 150 minutes per week and include muscle-strengthening exercises at least twice per week (2).

The Million Hearts campaign is a national private-public initiative sponsored by the U.S. Department of Health and Human Services that aims to decrease the number of heart attacks and strokes by 1 million over the next 5 years. It emphasizes the use of effective clinical preventive services combined with multifaceted policy interventions. More information is available at <http://millionhearts.hhs.gov>.

The Community Preventive Services Task Force recommends several community-based interventions to promote physical activity, including community-wide campaigns, social support interventions, school-based physical education, and several environmental and policy approaches. The recommendations are available at [www.thecommunityguide.org](http://www.thecommunityguide.org).

### Related USPSTF Recommendations

The USPSTF recommends intensive behavioral dietary counseling for adult patients with hyperlipidemia and other known risk factors for cardiovascular and diet-related chronic disease (grade B recommendation). It is in the process of updating this recommendation.

The USPSTF has recommendations addressing the most substantial causes of CVD. It recommends that adults aged 18 years or older be screened for hypertension. For selected adults, the USPSTF recommends screening

for lipid disorders and the use of aspirin to prevent CVD. The USPSTF recommends that clinicians screen all adult patients for obesity and offer or refer to intensive counseling and behavioral interventions to promote sustained weight loss for obese adults. Other recommendations on reducing risk for CVD are available on the USPSTF Web site at [www.uspreventiveservicestaskforce.org](http://www.uspreventiveservicestaskforce.org).

## OTHER CONSIDERATIONS

### Implementation

Medium- or high-intensity behavioral interventions to promote a healthful diet and physical activity may be provided to individual patients in primary care settings or in other sectors of the health care system after referral from a primary care clinician. In addition, clinicians may offer healthful diet and physical activity interventions by referring the patient to community-based organizations. Strong links between the primary care setting and community-based resources may improve the delivery of these services.

If individual risk for CVD is uncertain, several calculators and models are available to quantify a person's risk for cardiac events over the next 10 years. The Framingham-based Adult Treatment Panel III calculator (available at <http://hp2010.nhlbi.nih.net/atpiiii/calculator.asp>) performs well for the U.S. population. Persons with a 10-year risk for CVD greater than 20% are generally considered to be at high risk, those with a 10-year risk less than 10% are considered to be at low risk, and those in the 10% to 20% range are considered to be at intermediate risk. Persons at higher risk may benefit from counseling interventions more than persons at low risk, because even small improvements in intermediate outcomes in those at higher risk may result in clinically meaningful reductions in CVD events.

### Research Needs and Gaps

Research is needed on longitudinal behavioral and risk factor outcomes of interventions to promote a healthful diet and physical activity in younger adult populations. Future studies should examine the combined effects of clinical and community-based interventions and the association between small physiologic changes and long-term health outcomes. Consistent measurement and reporting of behavioral and risk factor outcomes would also improve the evidence base for behavioral counseling recommendations.

## DISCUSSION

### Burden of Disease

Cardiovascular disease is the leading cause of death in the United States, and well-established risk factors, such as obesity, hypertension, hyperlipidemia, and diabetes, are common in the adult population. The Centers for Disease Control and Prevention estimate that 49.7% of U.S. adults older than 20 years have at least one of the following CVD risk factors: uncontrolled hypertension, uncontrolled ele-

vated low-density lipoprotein (LDL) cholesterol levels, or current smoking (5).

### Scope of Review

The evidence review (3, 4) for this recommendation statement addressed whether counseling interventions relevant to primary care for physical activity or a healthful diet modify self-reported behaviors; intermediate physiologic outcomes (for example, reduction of lipid levels, blood pressure, weight, and body mass index [BMI] and increased glucose tolerance); and cardiovascular morbidity and mortality in adults without known CVD, hypertension, hyperlipidemia, or diabetes. The adverse effects of these counseling interventions were also reviewed. Interventions did not specifically focus on weight loss, because the USPSTF's recommendation on screening for obesity addresses this topic.

### Effectiveness of Counseling Interventions to Change Behavior and Outcomes

For health behavior outcomes, 25 healthful diet counseling trials, 30 physical activity counseling trials, and 17 combined lifestyle counseling trials found that medium- and high-intensity counseling interventions reduced self-reported dietary intake of salt, energy, and fats and increased both intake of fruits and vegetables and self-reported physical activity. On average, medium-intensity counseling interventions on physical activity produced a 38-minute increase in physical activity per week, and high-intensity counseling interventions on diet and combined lifestyle showed a decrease in energy consumption of approximately 180 kcal per day. Diet and combined lifestyle counseling interventions also decreased intake of total fat by 5.9% to 11% and saturated fat by 2.8% to 3.7% and increased consumption of fruits and vegetables by 0.4 to 2.0 servings daily.

For intermediate health outcomes, 8 physical activity counseling trials (3) showed little or no significant effect on BMI, blood pressure, lipid levels, or glucose tolerance. Sixteen healthful diet counseling trials and 14 combined lifestyle counseling trials reported intermediate outcomes. In these trials, medium- and high-intensity dietary interventions (with or without concurrent physical activity counseling) were associated with a decrease in BMI of 0.3 to 0.7 kg/m<sup>2</sup> and decreases in systolic blood pressure of 1.5 mm Hg and diastolic blood pressure of 0.7 mm Hg at 12 months.

The largest decrease in blood pressure occurred in 3 intensive salt-restriction counseling interventions in adults with mildly elevated diastolic blood pressure. High-intensity diet and combined lifestyle counseling interventions decreased total cholesterol levels by 0.17 mmol/L (6.56 mg/dL) and LDL cholesterol levels by 0.13 mmol/L (5.02 mg/dL).

The largest ( $n = 48\,835$ ) and highest-quality randomized trial of healthful diet counseling (specifically, a low-fat diet), the Women's Health Initiative (WHI) Dietary Modification Trial, showed significant differences in blood pres-

sure and fasting glucose levels at 12 months; however, these differences were no longer significant at 72 months (6). Changes were not significant in total cholesterol, LDL cholesterol, or high-density lipoprotein cholesterol levels at 12 and 36 months. More important, no differences occurred in major CVD events or mortality after 8 years.

However, the WHI had some limitations that precluded the USPSTF from determining the effectiveness of healthful diet counseling for CVD prevention. Because the WHI was primarily designed to detect differences in breast cancer rather than CVD, its power to detect a statistical difference in cardiovascular outcomes in the target population was low. Furthermore, this study's use of a general low-fat diet intervention is inconsistent with current healthful diet guidelines (1), which suggest reducing only some types of dietary fats (for example, saturated fat).

Overall, the most important factor for differences in effect sizes was intervention intensity. The strongest evidence for improvement of physiologic outcomes was for high-intensity counseling interventions. Few medium-intensity interventions and no high-intensity interventions were provided by the primary care clinicians. Rather, counseling interventions took place in other sectors of the health care system or community settings.

### Potential Harms of Counseling Interventions

No healthful diet counseling trials reported specific adverse events. Seven case-crossover studies showed that the risk for a cardiac event (for example, sudden death or myocardial infarction) increased during vigorous physical exertion, ranging from a 2- to 17-fold increased risk, with the highest risk occurring among participants with the lowest levels of regular physical activity. However, the absolute risk for a cardiac event during physical activity is extremely low. One study estimated the incidence of sudden death to be 1 per 1.42 million person-hours of vigorous exercise (3).

### Estimate of Net Benefit

The USPSTF assessed overall improvement in self-reported health behaviors, systolic and diastolic blood pressure, BMI, and total and LDL cholesterol levels in medium- and high-intensity lifestyle counseling interventions as small. Because the USPSTF determined that there were few if any adverse effects of these counseling interventions, it concluded with moderate certainty that these interventions produce a small net benefit.

### Response to Public Comments

A draft version of this recommendation statement was posted for public comment on the USPSTF Web site from 22 February to 22 March 2011. Sixty-five responses were received during this period. In response to these comments, the USPSTF clarified the target population throughout the recommendation statement and refined the terminology describing both behavioral and intermediate outcomes. It added information to the Interventions section and expanded the Implementation section to provide further guidance to clinicians. It also added the Other Ap-

proaches to Prevention section to highlight important public health interventions addressing diet and exercise and expanded the Recommendation of Others section to include recommendations from other professional associations.

### UPDATE OF PREVIOUS USPSTF RECOMMENDATION

This recommendation replaces the USPSTF's previous separate recommendations (both I statements) on behavioral counseling to promote a healthful diet (2003) and physical activity (2002) in adults without preexisting CVD or its risk factors. The 2003 recommendation on dietary counseling included a positive (grade B) recommendation for counseling adults with risk factors for CVD; however, the current recommendation does not address this population. The current recommendation statement differs from the previous statements in that the USPSTF now finds sufficient evidence to conclude with moderate certainty that medium- to high-intensity counseling has a small net benefit on health behaviors and outcomes in adults without CVD, hypertension, hyperlipidemia, or diabetes.

### RECOMMENDATIONS OF OTHERS

Many organizations and federal agencies recommend that health care providers counsel adults about physical activity. These recommendations are based on the health benefits of physical activity rather than on the effectiveness of clinician counseling to promote changes in physical activity or long-term health outcomes.

The American Heart Association recommends that clinicians use counseling interventions to promote healthy diet and physical activity that combine 2 or more of the following strategies: set specific, proximal goals; provide feedback on progress; provide strategies for self-monitoring; establish a plan for frequency and follow-up; use motivational interviewing; and build self-efficacy (7).

The American College of Sports Medicine has recommendations to assist health professionals who counsel healthy adults on individualized exercise programs. This organization recommends 150 minutes of moderate-intensity exercise per week and 2 to 3 days per week of resistance, flexibility, and neuromotor exercises (8). Previous statements by the American Academy of Family Physicians about counseling for physical activity have been consistent with those of the USPSTF, and the Academy is currently updating its recommendations (9).

From the U.S. Preventive Services Task Force, Rockville, Maryland.

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tion of the Agency for Healthcare Research and Quality or the U.S. Department of Health and Human Services.

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**Requests for Single Reprints:** Reprints are available from the USPSTF Web site ([www.uspreventiveservicestaskforce.org](http://www.uspreventiveservicestaskforce.org)).

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## APPENDIX: U.S. PREVENTIVE SERVICES TASK FORCE

Members of the U.S. Preventive Services Task Force at the time this recommendation was finalized† are Virginia A. Moyer, MD, MPH, *Chair* (Baylor College of Medicine, Houston, Texas); Michael L. LeFevre, MD, MSPH, *Co-Vice Chair* (University of Missouri School of Medicine, Columbia, Missouri); Albert L. Siu, MD, MSPH, *Co-Vice Chair* (Mount Sinai School of Medicine, New York, and James J. Peters Veterans Affairs Medical Center, Bronx, New York); Linda Ciofu Baumann, PhD, RN (University of Wisconsin, Madison, Wisconsin); Kirsten Bibbins-Domingo, PhD, MD (University of California, San Francisco, San Francisco, California); Susan J. Curry, PhD (University of Iowa College of Public Health, Iowa City, Iowa); Mark Ebell, MD, MS (University of Georgia, Athens, Georgia); Glenn Flores, MD (University of Texas Southwestern, Dallas, Texas); Adelita Gonzales Cantu, RN, PhD (University of Texas Health Science Center, San Antonio, Texas); David C. Grossman, MD,

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† For a list of current Task Force members, go to [www.uspreventiveservicestaskforce.org/members.htm](http://www.uspreventiveservicestaskforce.org/members.htm).