

Primary Care Behavioral Interventions to Reduce Illicit Drug and Nonmedical Pharmaceutical Use in Children and Adolescents: U.S. Preventive Services Task Force Recommendation Statement

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Description: Update of the 2008 U.S. Preventive Services Task Force (USPSTF) recommendation on screening for illicit drug use.

Methods: The USPSTF reviewed the evidence on interventions to help adolescents who have never used drugs to remain abstinent and interventions to help adolescents who are using drugs but do not meet criteria for a substance use disorder to reduce or stop their use.

Population: This recommendation applies to children and adolescents younger than age 18 years who have not been diagnosed with a substance use disorder.

Recommendation: The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of primary care–based behavioral interventions to prevent or reduce illicit drug or nonmedical pharmaceutical use in children and adolescents. (I statement)

Ann Intern Med.

www.annals.org

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* For a list of USPSTF members, see the Appendix (available at www.annals.org).

This article was published online first at www.annals.org on 11 March 2014.

The U.S. Preventive Services Task Force (USPSTF) makes recommendations about the effectiveness of specific preventive care 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

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of primary care–based behavioral interventions to prevent or reduce illicit drug or nonmedical pharmaceutical use in children and adolescents. This recommendation applies to children and adolescents who have not already been diagnosed with a substance use disorder. (I statement)

See the Clinical Considerations section for suggestions for practice regarding the I statement and definitions of terms that are used.

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

Appendix Table 1 describes the USPSTF grades, and **Appendix Table 2** describes the USPSTF classification of

levels of certainty regarding net benefit (both tables are available at www.annals.org).

RATIONALE Importance

According to the National Survey on Drug Use and Health (NSDUH), more than 4300 adolescents aged 12 to 17 years use drugs for the first time each day in the United States (1). (Note: The NSDUH collected data on use of illicit drugs and nonmedical use of prescription drugs but not over-the-counter drugs; thus, actual drug use [illicit and nonmedical use of all pharmaceuticals] rates may be greater.) Approximately 9.5% of youths aged 12 to 17 years report drug use in the past month (1). In addition, in 2012, 4.4% of eighth-, tenth-, and twelfth-grade students reported using over-the-counter cough or cold medicine in the past year for nonmedical reasons (2). Drug use is associated with many negative health, social, and economic consequences and is a significant contributor to 3 of the leading causes of death among adolescents—motor vehicle accidents, homicide, and suicide. Consequences not only

See also:

Print

Summary for Patients 1

Web-Only

CME quiz

Figure. Primary care behavioral interventions to reduce illicit drug and nonmedical pharmaceutical use in children and adolescents: clinical summary of U.S. Preventive Services Task Force recommendation.

Annals of Internal Medicine



PRIMARY CARE BEHAVIORAL INTERVENTIONS TO REDUCE ILLICIT DRUG AND NONMEDICAL PHARMACEUTICAL USE IN CHILDREN AND ADOLESCENTS
CLINICAL SUMMARY OF U.S. PREVENTIVE SERVICES TASK FORCE RECOMMENDATION

Population	Children and adolescents younger than age 18 y who have not already been diagnosed with a substance use disorder
Recommendation	No recommendation. Grade: I statement
Behavioral Interventions	Although the evidence is insufficient to recommend specific interventions in the primary care setting, face-to-face counseling, videos, print materials, and interactive computer-based tools have been studied. Studies on these interventions were limited, and findings on whether interventions significantly improved health outcomes were inconsistent.
Balance of Benefits and Harms	The evidence about primary care–based behavioral interventions to prevent or reduce illicit drug and nonmedical pharmaceutical use in children and adolescents is insufficient, and the balance of benefits and harms cannot be determined.
Other Relevant USPSTF Recommendations	The USPSTF has made recommendations on screening for and interventions to decrease the unhealthy use of other substances, including alcohol and tobacco. These recommendations are available at www.uspreventiveservicestaskforce.org .

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.

arise from frequent and heavy drug use, but use increases risk-taking behaviors while intoxicated, such as driving under the influence, unsafe sexual activity, and violence. In 2011, more than 150 000 adolescents were treated in emergency departments for complications of illicit drug and nonmedical pharmaceutical use (3).

Benefits of Behavioral Interventions

The USPSTF found inadequate evidence about the effect of behavioral interventions to reduce drug use on health outcomes in adolescents. It also found inadequate evidence about the effect of behavioral interventions to reduce initiation of drug use in adolescents. The Task Force found no evidence about behavioral interventions for children younger than age 11 years.

Harms of Behavioral Interventions

The USPSTF found no studies about the magnitude of the harms of behavioral interventions to prevent or reduce drug use. Although the USPSTF recognizes that theoretical harms, such as the potential to increase drug initiation through a false sense of security, may exist, it concludes that the harms of behavioral interventions are probably small to none.

USPSTF Assessment

The USPSTF concludes that the evidence about primary care–based behavioral interventions to prevent or reduce illicit drug and nonmedical pharmaceutical use in children and adolescents is insufficient, and the balance of benefits and harms cannot be determined.

CLINICAL CONSIDERATIONS

Patient Population Under Consideration

This recommendation applies to children and adolescents younger than age 18 years. It does not apply to children and adolescents who have been diagnosed with a substance use disorder. All persons with a substance use disorder should receive appropriate treatment. Although this statement does not include a recommendation on screening for drug use, further information on screening tests is provided in the Discussion section.

Definitions

The USPSTF recognizes that various definitions have been applied to the terms *drug use*, *misuse*, and *abuse*. For the purpose of this recommendation statement, “drug use” encompasses the general concepts of “illicit drug use” and “nonmedical use of pharmaceuticals” (prescription and over-the-counter drugs). “Illicit drug use” specifies use of illegal drugs (such as cocaine and heroin) and inhalants (such as aerosols, glue, and gasoline). “Nonmedical use of pharmaceuticals” includes the use of prescribed medications for a purpose other than prescribed (or by a person not prescribed the medication) or the use of over-the-counter drugs for a purpose other than medically indicated. To be consistent with the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*, “substance use disorder” is used instead of “substance abuse” and “substance dependence” unless describing previously collected study or sur-

vey results that reported findings using the terms *abuse* and *dependence*.

Behavioral Interventions

Although the evidence to recommend specific interventions in the primary care setting is insufficient, interventions that have been studied include face-to-face counseling, videos, print materials, and interactive computer-based tools. Studies on these interventions provide little to no evidence of significant improvements in health outcomes.

Suggestions for Practice Regarding the I Statement

In deciding whether to provide behavioral interventions to prevent or reduce illicit drug and nonmedical pharmaceutical use for children and adolescents, primary care providers should consider the following factors.

Potential Preventable Burden

According to the NSDUH, nearly 1 in 10 American adolescents use drugs (1). In 2011, the Drug Abuse Warning Network estimated that more than 75 000 emergency department visits by children and adolescents involved illicit drugs, and more than 75 000 visits involved the nonmedical use of pharmaceuticals (3). The consequences of drug use include risk for progression to a substance use disorder, an increase in risk-taking behaviors while under the influence, and lower educational achievement and attainment. Persons who initiate marijuana use at younger ages are more likely to progress to drug abuse and dependence as adults compared with those who initiate use after age 18 years (1).

Costs

The costs associated with primary care–based behavioral interventions vary substantially and are similar to costs of interventions for tobacco and alcohol reduction. Health systems and providers should account for the staff time associated with any intervention, which may range from distributing educational materials to a series of office-based, 1-on-1 counseling sessions. Computer-based interactive tools linked to an adolescent's personal health record may require less ongoing staff time to administer. There are also potential costs for families, especially for interventions that require significant participation from parents as well as adolescents.

Potential Harms

Potential harms associated with behavioral interventions include anxiety, interference with the clinician–patient relationship, opportunity costs (that is, time spent on these interventions that could be used for other, more effective interventions), unintended increases in other risky behaviors, and even paradoxical increases in drug use or initiation. Although evidence is limited, no direct harms were identified.

Current Practice

Most clinicians who care for children and adolescents in the United States do not provide behavioral interventions to reduce drug use. Given the lack of evidence of effective primary care–based interventions, this is not surprising. It is important to recognize that this recommendation does not address screening for drug use. Screening adolescents who are not suspected to be using drugs may identify some who meet criteria for a substance use disorder and for whom treatment is available. The Task Force did not find effective interventions to reduce future drug use in adolescents who have tried illicit drugs.

Useful Resources

The USPSTF has made recommendations on screening for and interventions to decrease the unhealthy use of other substances, including alcohol and tobacco. These recommendations are available on the USPSTF Web site (www.uspreventiveservicestaskforce.org).

OTHER CONSIDERATIONS

Research Needs and Gaps

Illicit drug and nonmedical pharmaceutical use in adolescents is an important public health problem. Evidence to assess the effects of behavioral interventions in adolescents is limited, and high-quality studies that focus on the role of primary care professionals in preventing initiation of drug use and reducing use among those who have experimented are needed. Research on brief interventions; interventions that link screening with tailored interventions; and social media, cell phone, and Internet-based interventions is needed and may identify novel, effective risk-reduction strategies. Research should continue to study diverse populations and the effects of interventions on children and adolescents with different risks, as well as which interventions work best in these subpopulations. Research should continue to examine the effectiveness of behavioral interventions with and without parental involvement. Additional high-quality studies that evaluate interventions and address drug use in the context of other substances, including tobacco and alcohol, are also needed. Research to develop and validate tools to measure current and past substance use is needed. Attention should be given to the standardization of research outcomes to improve the ability of future systematic reviews to move the field forward.

DISCUSSION

Burden of Disease

According to the NSDUH, more than 4300 adolescents aged 12 to 17 years use drugs for the first time each day in the United States (1). The first drug used is often marijuana (by approximately two thirds of adolescents). However, for more than 1 in 4 adolescents, the initial drug is a prescription medication taken for nonmedical purposes (most often an opioid pain medicine). The percentage of

adolescents aged 12 to 17 years who report drug use in the past month is greater than those who report cigarette use and only slightly less than those who report alcohol use (9.5% vs. 6.6% vs. 12.9%, respectively) (1). More than 7% of adolescents aged 12 to 17 years report marijuana use in the past month; 2.8% report using prescription-type drugs for nonmedical purposes; and less than 1% report cocaine, hallucinogen, or inhalant use (1). In addition, in 2012, 4.4% of eighth-, tenth-, and twelfth-grade students reported using over-the-counter cough or cold medicine in the past year for nonmedical reasons (2). In 2012, the rate of drug dependence or abuse in adolescents aged 12 to 17 years was 4% (1).

Drug use is associated with many negative health, social, and economic consequences and is a significant contributor to 3 of the leading causes of death among adolescents: motor vehicle accidents, homicide, and suicide. Consequences not only arise from frequent or heavy drug use, but use increases risk-taking behaviors while intoxicated, such as driving under the influence, unsafe sexual activity, and violence. In 2011, more than 150 000 adolescents were treated in emergency departments for complications of illicit drug and nonmedical pharmaceutical use (3).

Scope of Review

The USPSTF uses the term *drug use* to reflect a spectrum of behaviors that may progress, typically in stages. The stage of primary abstinence includes persons who never use drugs. The stages of use begin with experimentation and may progress from limited use to problematic or harmful use and mild to severe substance use disorder. The stage of secondary abstinence includes persons who stop using drugs. The focus of this recommendation is 2-fold: interventions to help adolescents who have never used drugs to remain abstinent and interventions to help adolescents who are using drugs but do not meet criteria for a substance use disorder to reduce or stop their use. Adolescents who are diagnosed with a substance use disorder require treatment. These treatments are not part of clinical prevention and are outside the scope of this recommendation.

This review includes consideration of illicit drug and nonmedical pharmaceutical use, which includes both prescription and over-the-counter medications. Although the USPSTF recognizes that laws that apply to marijuana use are shifting in some areas of the United States, potentially raising questions about whether marijuana is an illicit drug, the Task Force includes marijuana use within the scope of this recommendation. Other illicit drugs within the scope of this recommendation include cocaine, heroin, hallucinogens, and inhalants.

Nonmedical use of prescription and over-the-counter medications involves taking a drug for reasons other than why it was prescribed or recommended, often by a person other than for whom it was prescribed and for the purpose

of “getting high.” The largest classes of prescription medications used for nonmedical purposes within the scope of this recommendation are opioid pain relievers, central nervous system depressants (commonly called tranquilizers), and stimulants, including medications used to treat attention-deficit/hyperactivity disorder. Nonmedical use of over-the-counter medications, including dextromethorphan and cough suppressants, also occurs. This recommendation only applies to psychoactive medications and does not include the nonmedical use of anabolic steroids or athletic performance-enhancing drugs.

Although alcohol and tobacco are both psychoactive drugs, they are not the focus of this recommendation. The USPSTF has made separate recommendations on screening and counseling adolescents for tobacco and alcohol use.

Screening Tests

Although the focus of this recommendation is not on screening for drug use, screening may allow behavioral interventions to be tailored to the situation of the individual adolescent. The American Academy of Pediatrics recommends the CRAFFT (Car, Relax, Alone, Forget, Friends, Trouble) screening tool (available at www.projectcork.org/clinical_tools/pdf/CRAFFT.pdf), which was developed specifically for use with adolescents. The 2-part screening tool takes less than 2 minutes to administer and screens for alcohol and drug use. It is designed to be delivered as an interview or paper- or computer-based self-report. It is simple to score and has good sensitivity and specificity across a range of populations and settings.

Although the USPSTF concludes that the evidence is insufficient to make a recommendation for or against behavioral interventions to prevent or reduce drug use in children and adolescents who do not have a substance use disorder, primary care professionals may consider screening adolescent patients to identify those who are experiencing consequences of drug use. Adolescents who have a substance use disorder should receive appropriate treatment.

Effectiveness of Behavioral Interventions to Change Behavior and Outcomes

The USPSTF found only 6 fair- or good-quality studies of 4 primary care-relevant behavioral interventions that focused on reducing drug use in adolescents (4). These interventions included face-to-face counseling, videos, print materials, and interactive computer-based tools. Although the interventions substantially varied in their intensity, components, populations, and sample sizes, they provide almost no evidence of significant improvements in health outcomes. A few changes in drug use and drug initiation were found, but given the lack of clear and consistent findings and the overall small evidence base, the USPSTF could not draw definitive conclusions. It is possible that brief primary care-relevant interventions do not significantly affect adolescent drug use or that more effective interventions may need to be developed.

Harris and colleagues (5) conducted a large trial of a brief behavioral intervention provided in primary care practice settings. The intervention included computer-assisted screening of more than 2000 adolescents aged 12 to 18 years using the CRAFFT screening tool; a nontailored, brief, computer-based educational session; and 2 to 3 minutes of tailored advice from the patient's primary care clinician. Clinicians were provided with training and given talking points for each patient based on his or her responses to the CRAFFT questionnaire. The intervention targeted alcohol and marijuana use and took less than 10 minutes to complete. Although relevant in U.S. practice, the U.S. group of the study found no significant differences between the intervention and control groups in marijuana initiation, cessation, or consequences of use at the 12-month follow-up. The study did find a statistically significant reduction in the number of adolescents who did not initiate alcohol use in the U.S. intervention group at 12 months (adjusted relative risk ratio, 0.66 [95% CI, 0.47 to 0.93]). The study's parallel group in the Czech Republic found a large and statistically significant reduction in the initiation of marijuana use and an increase in cessation rates at 12 months in the intervention group (adjusted relative risk ratio, 0.47 [CI, 0.29 to 0.76] and 2.53 [CI, 1.06 to 6.05], respectively) but no effect on alcohol use (5).

Walton and colleagues (6) conducted a study that involved more than 300 U.S. adolescents aged 12 to 18 years who reported marijuana use. The trial compared the effectiveness of an interactive computer-delivered intervention and a therapist-delivered intervention based on motivational interviewing with a control group. Both interventions took approximately 35 to 40 minutes to complete. The study authors concluded that there were "no effects of a computer or therapist behavioral intervention on cannabis use." (6).

Schinke, Fang, and Cole (7–10) conducted 3 studies, reported in 4 publications, of a similar intensive, computer-based behavioral intervention delivered at home to mothers and their daughters aged 11 to 14 years. Mothers and daughters each completed a 45-minute interactive session weekly for 9 weeks; some sessions were completed separately and others completed together. The goals for the mothers were not solely focused on drug use and included improving communication with their daughters, monitoring their daughters' behaviors and activities, building their daughters' self-image and self-esteem, and establishing rules and consequences for substance use. For the daughters, the program focused on building skills for managing stress, conflict, and mood; dealing with peer pressure; and improving body esteem and self-efficacy. The studies measured several outcomes and examined marijuana, non-medical prescription drug, and inhalant use. They found statistically significant decreases in marijuana use and non-medical use of prescription drugs in all 3 studies after 12 to 24 months, as well as statistically significant decreases in inhalant use in 1 study. The studies used an unusual and

difficult-to-interpret measure of drug use. It seems that overall drug use was very low across the studies, and the clinical significance of the results is difficult to determine. It is not clear whether the intervention helped girls who had never used drugs to remain abstinent or helped a few girls who were frequently using drugs to reduce or stop their drug use (7–10).

Potential Harms of Behavioral Interventions

No studies provided evidence about the magnitude of the harms of behavioral interventions to prevent or reduce drug use. Although the USPSTF recognizes that theoretical harms, such as the potential to increase drug initiation through a false sense of security, may exist, it believes that the harms of behavioral interventions are probably small to none.

Estimate of Magnitude of Net Benefit

Given the limited and inconsistent available evidence about the effectiveness of behavioral interventions to prevent or reduce illicit drug use and the nonmedical use of prescription medications, the USPSTF concludes that the balance of benefits and harms cannot be determined.

Associated Issues

Illicit drug and nonmedical pharmaceutical use is associated with alcohol and tobacco use in adolescents. Although it was once believed that tobacco and alcohol use were usually precursors to drug use, it is important to recognize that more adolescents use drugs than tobacco. Drugs, including illicit drugs, may be easier for U.S. adolescents to obtain than tobacco products. The strong association of use suggests that primary care professionals may want to screen for use of all 3 substances if they choose to screen for any. Because of the strong association among tobacco, alcohol, and drug use in adolescents, researchers should consider developing behavioral interventions to prevent and reduce use of all 3 substances. However, it is also possible that effective strategies for preventing and reducing use may need to be targeted, especially among different communities of adolescents and even for different drugs. Primary care professionals should remain aware of substance use patterns in their communities and the evolving evidence on effective prevention interventions.

Response to Public Comment

A draft version of this recommendation statement was posted for public comment on the USPSTF Web site from 1 October to 28 October 2013. All comments were reviewed and considered. Overall, most comments agreed that more evidence is needed to evaluate the effectiveness of behavioral interventions to reduce drug use. The recommendation statement was revised in response to comments seeking clarification of the terminology used and the patient population to whom the recommendation statement applies. A few comments requested that a future single recommendation statement be issued that includes alcohol, tobacco, and drug use in children and adolescents. The

USPSTF currently has separate recommendation statements that address each substance and will consider concurrently updating recommendation statements that pertain to screening and interventions for all 3 areas in the future.

UPDATE OF PREVIOUS USPSTF RECOMMENDATION

In 2008, the USPSTF issued a recommendation that focused exclusively on screening for illicit drug use (11). That recommendation included screening in adolescents, adults, and pregnant women. At that time, it concluded that the evidence was not sufficient to recommend for or against screening in any of these populations (I statement). In updating this recommendation, and in response to feedback from the public, the Task Force chose to refine the scope of the recommendation in several notable ways. The scope of this recommendation was narrowed to focus only on adolescents and children, was broadened to include illicit drug and nonmedical pharmaceutical use, and shifted from screening to the effectiveness of behavioral interventions to prevent and reduce drug use. A separate recommendation will be developed on illicit drug and nonmedical pharmaceutical use in adults and pregnant women.

RECOMMENDATIONS OF OTHERS

The American Academy of Pediatrics recommends that all adolescents be screened for alcohol and drug use and that, based on the results, clinicians conduct further assessment, provide guidance and brief counseling interventions, and, if appropriate, refer for treatment (12). The American Academy of Family Physicians' recommendation on interventions to address drug use in children and adolescents is currently under review.

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

Disclaimer: Recommendations made by the USPSTF are independent of the U.S. government. They should not be construed as an official position of the Agency for Healthcare Research and Quality or the U.S. Department of Health and Human Services.

Financial Support: The USPSTF is an independent, voluntary body. The U.S. Congress mandates that the Agency for Healthcare Research and Quality support the operations of the USPSTF.

Potential Conflicts of Interest: Dr. Moyer: *Support for travel to meetings for the study or other purposes:* AHRQ. Authors not named here have disclosed no conflicts of interest. The authors declared that their organi-

zation's policy regarding management of conflicts of interest was followed in the development of this clinical guideline. Disclosure forms from USPSTF members can be viewed at www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=M14-0334.

Requests for Single Reprints: Reprints are available from the USPSTF Web site (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 (American Board of Pediatrics, Chapel Hill, North Carolina); 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); Susan J. Curry, PhD (University of Iowa College of Public Health, Iowa City, Iowa); Mark Ebell, MD, MS (University of Georgia, Athens, Georgia); Francisco A.R. García, MD, MPH

(Pima County Department of Health, Tucson, Arizona); Jessica Herzstein, MD, MPH (Air Products, Allentown, Pennsylvania); Douglas K. Owens, MD, MS (Veterans Affairs Palo Alto Health Care System, Palo Alto, and Stanford University, Stanford, California); William R. Phillips, MD, MPH (University of Washington, Seattle, Washington); and Michael P. Pignone, MD, MPH (University of North Carolina, Chapel Hill, North Carolina). Former USPSTF members Adelita Gonzales Cantu, RN, PhD, and Wanda Nicholson, MD, MPH, MBA, also contributed to the development of this recommendation.

† For a list of current Task Force members, go to www.uspreventiveservicestaskforce.org/members.htm.

Appendix 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	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 for selected patients depending on individual circumstances.
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.

Appendix 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.