The Guide to Clinical Preventive Services

2010 - 2011

Recommendations of the U.S. Preventive Services Task Force

AHRQ
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USPSTF

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The recommendation statements in this *Guide* are abridged. To view the full recommendation statements or recommendation statements published after March 2010, go to **http://www.USPreventiveServicesTaskForce.org.**

The U.S Preventive Services Task Force's (USPSTF) **Electronic Preventive Services Selector (ePSS)** allows users to download the USPSTF recommendations to PDA or mobile devices, receive notifications of updates, and search and browse recommendations online. Users can search the ePSS for recommendations by patient age, sex, and pregnancy status. To download, subscribe, or search, go to **http://epss.ahrq.gov.**

Recommendations made by the USPSTF are independent of the U.S. Government. They should not be construed as an official position of AHRQ or the U.S. Department of Health and Human Services.

Foreword

Since 1998, the Agency for Healthcare Research and Quality (AHRQ) has convened the U.S. Preventive Services Task Force (USPSTF)—an independent panel of private-sector experts in prevention and primary care. AHRQ staff provide scientific, technical, and administrative support for the Task Force, and assist in disseminating its findings and recommendations to key audiences.

In that role, we are pleased to make *The Guide to Clinical Preventive Services 2010-2011* available to those who seek to ensure that their patients receive the highest quality clinical preventive services.

Findings and recommendations from the *Guide* are routinely used in a variety of settings to improve the preventive care that patients receive. For example, a computer-aided screening initiative based on the recommendations and delivered via an online annual Health Risk Assessment has been successfully implemented for employees at IBM Integrated Health Services. Also, an education and training program for physician assistants at the University of North Texas Health Science Center in Fort Worth is using the *Guide* as a tool for student research on clinical preventive services.

In addition, the USPSTF recommendations are valuable tools that can help you and your patients have a conversation about which clinical preventive services are best for them.

As more information becomes available to clinicians and patients alike, AHRQ's goal is to help improve patients' health and well being, and contribute to better health outcomes for the Nation overall.

Carolyn M. Clancy, M.D.
Director
Agency for Healthcare Research and Quality

Preface

Since being codified by Congress in 1984, the U.S. Preventive Services Task Force (USPSTF) has been fulfilling its charge to conduct rigorous reviews of research evidence to create evidence-based recommendations for preventive services that should be provided in the primary care setting.

Over this quarter century of work, the USPSTF has made and maintained more than 67 separate recommendations covering services that are intended to improve health outcomes from heart disease, cancer, infectious diseases, and other conditions and events that impact the health of children, adolescents, adults, and pregnant women. *The Guide to Clinical Preventive Services 2010-2011* is a compilation of abridged USPSTF recommendations, both new and updated, released from 2002 to 2010 and can be used as an evidence-based tool at the point of patient care. Recommendations that were being updated while this edition of the *Guide* was being compiled, as well as the complete USPSTF recommendation statements, are available along with their supporting scientific evidence at http://www.USPreventiveServices TaskForce.org.

The use of these recommendations has evolved over time. The suggestion that it is not beneficial to provide all of the services available for prevention was nearly a heretical concept in U.S. medical practice when the first USPSTF started its work. Over time, individual health care providers, professional

organizations, integrated health systems, health plans and insurers, and public programs, including the Centers for Medicare & Medicaid Services as well as groups crafting health quality measures and national health objectives, have adopted the recommendations. The primary audience for the USPSTF's work remains primary care clinicians, and the recommendations are now considered by many to provide definitive standards for preventive services.

Another exciting development is that the work of the USPSTF is central to the preventive benefits covered under the Patient Protection and Affordable Care Act. Under the new law, preventive services with a Task Force grade of A or B will be covered under new health insurance plans or policies. Even prior to national reform activities, the USPSTF committed to increasing the transparency of our work, and these efforts gained additional momentum in view of the enhanced importance of the recommendations under the new law. The USPSTF now employs an Internet-based public comment process to assist us in better crafting messages for the public and in considering additional input from experts and advocates. With these changes, though, the USPSTF remains committed to evaluating evidence free from the influence of politics, special interests, and advocacy.

Our methods continue to evolve as well. Our Procedure Manual, which can be found at http://www.USPreventiveServicesTaskForce.org/uspstf08/methods/procmanual.htm, outlines our updated process for evaluating the quality and strength of the

evidence for a service, determining the net health benefit (benefit minus harms) associated with the service, and judging the level of certainty that providing these services in primary care will realize the expected level of benefit. We continue to explore the appropriate use of mathematical modeling on filling in research gaps regarding the ages at which to start and stop providing a service, and at what time intervals. In addition, we are committed to improving the communication of our recommendations to a broader audience, including patients and policymakers.

As before, the letter grade linked to each recommendation reflects the magnitude of net benefit and the strength and certainty of the evidence supporting the provision of a specific preventive service. These grades translate to practice guidance for clinicians:

- Discuss services with **"A" and "B" recommendations** with eligible patients and offer them as a priority.
- Discourage the use of services with **"D" recommendations** unless there are unusual additional considerations.
- Give lower priority to services with **"C" recommendations**; they need not be provided unless there are individual considerations in favor of providing the service.
- Carefully read the Clinical Considerations section for guidance for services with **"I" statements**, and

help patients understand the uncertainty surrounding these services since the evidence is insufficient to determine net benefit.

As is true of all patient care, preventive services have become much more complex in view of ongoing research. The USPSTF realizes that clinical decisions about patients involve more complex considerations than the evidence alone; clinicians should always understand the evidence but individualize decisionmaking to the specific patient and situation. While providers and patients look for simple messages and actions, our recommendations reflect the advances in knowledge in this critical area of health services, and, in order to maximize the health benefit and decrease any health harms, we must consider the new complexity as we do for all medical services we provide. The Clinical Considerations section of each USPSTF recommendation statement helps clinicians by offering practical information so they can tailor these recommendations to individual patients.

I strongly encourage clinicians to visit the USPSTF Web site and read the complete recommendation statements for those services they provide, as the additional information can help them deliver the highest quality preventive care. In addition, the USPSTF Electronic Preventive Services Selector (ePSS), available via PDA or on the Web at http://epss.ahrq.gov, allows users to search USPSTF recommendations by patient age and other clinical characteristics.

I hope you find *The Guide to Clinical Preventive Services 2010-2011* to be a useful tool as you care for patients. Based on the best medical evidence available, I am confident that by implementing these recommended services, you will help your patients live longer and healthier lives.

Ned Calonge, M.D., M.P.H.
Chair, U.S. Preventive Services Task Force

Contents

*New recommendations released March 2009 to March 2010.

Section 1.

Preventive Services Recommended by the USPSTF

All recommendation statements in this Guide are abridged. To see the full recommendation statements and recommendations published after March 2010, go to http://www.USPreventiveServicesTaskForce.org.

Preventive Services Recommended by the USPSTF

The U.S. Preventive Services Task Force (USPSTF) recommends that clinicians discuss these preventive services with eligible patients and offer them as a priority. All these services have received an "A" or a "B" (recommended) grade from the Task Force.

For definitions of all grades used by the USPSTF, see Appendix A (beginning on p. 228). The full listings of all USPSTF recommendations for adults and children are in Section 2 (beginning on p. 11) and Section 3 (beginning on P. 193).

Recommendation	Adults		Special Populations	
	Men	Women	Pregnant Women	Children
Abdominal Aortic Aneurysm, Screening[1]	✓			
Alcohol Misuse Screening and Behavioral Counseling Interventions	✓	✓	✓	
Aspirin for the Prevention of Cardiovascular Disease[2]	✓	✓		
Asymptomatic Bacteriuria in Adults, Screening[3]			✓	
Breast Cancer, Screening[4]		✓		

continued

Preventive Services Recommended by the USPSTF *(continued)*

Recommendation	Adults		Special Populations	
	Men	Women	Pregnant Women	Children
Breast and Ovarian Cancer Susceptibility, Genetic Risk Assessment and BRCA Mutation Testing[5]		✓		
Breastfeeding, Primary Care Interventions to Promote[6]		✓	✓	
Cervical Cancer, Screening[7]		✓		
Chlamydial Infection, Screening[8]		✓	✓	
Colorectal Cancer, Screening[9]	✓	✓		
Congenital Hypothyroidism, Screening[10]				✓
Depression (Adults), Screening[11]	✓	✓		

continued

Recommendation	Adults		Special Populations	
	Men	Women	Pregnant Women	Children
Folic Acid Supplementation[12]		✓		
Gonorrhea, Screening[13]		✓		
Gonorrhea, Prophylactic Medication[14]				✓
Hearing Loss in Newborns, Screening[15]				✓
Hepatitis B Virus Infection, Screening[16]			✓	
High Blood Pressure, Screening	✓	✓		
HIV, Screening[17]	✓	✓	✓	✓
Iron Deficiency Anemia, Prevention[18]				✓
Iron Deficiency Anemia, Screening[19]			✓	
Lipid Disorders in Adults, Screening[20]	✓	✓		

continued

Preventive Services Recommended by the USPSTF *(continued)*

Recommendation	Adults		Special Populations	
	Men	Women	Pregnant Women	Children
Major Depressive Disorder in Children and Adolescents, Screening[21]				✓
Obesity in Adults, Screening[22]	✓	✓		
Obesity in Children and Adolescents, Screening[23]				✓
Osteoporosis, Screening[24]		✓		
Phenylketonuria, Screening[25]				✓
Rh (D) Incompatibility, Screening[26]			✓	
Sexually Transmitted Infections, Counseling[27]	✓	✓		✓
Sickle Cell Disease, Screening[28]				✓

continued

Preventive Services Recommended by the USPSTF *(continued)*				
	Adults		Special Populations	
Recommendation	Men	Women	Pregnant Women	Children
Syphilis Infection, Screening[29]	✓	✓	✓	
Tobacco Use and Tobacco-Caused Disease, Counseling and Interventions[30]	✓	✓	✓	
Type 2 Diabetes Mellitus in Adults, Screening[31]	✓	✓		
Visual Impairment in Children Younger than Age 5 Years, Screening[32]				✓

[1]One-time screening by ultrasonography in men aged 65 to 75 who have ever smoked.

[2]When the potential harm of an increase in gastrointestinal hemorrhage is outweighed by a potential benefit of a reduction in myocardial infarctions (men aged 45-79 years) or in ischemic strokes (women aged 55-79 years).

[3]Pregnant women at 12-16 weeks gestation or at first prenatal visit, if later.

[4]Biennial screening mammography for women aged 50 to 74 years. See Summary of 2002 Recommendations for information about the Affordable Health Care Act.

[5]Refer women whose family history is associated with an increased risk for deleterious mutations in *BRCA1* or *BRCA2* genes for genetic counseling and evaluation for *BRCA* testing.

[6]Interventions during pregnancy and after birth to promote and support breastfeeding.

[7]Women aged 21-65 who have been sexually active and have a cervix.

[8]Sexually active women 24 and younger and other asymptomatic women at increased risk for infection. Asymptomatic pregnant women 24 and younger and others at increased risk.

[9]Adults aged 50-75 using fecal occult blood testing, sigmoidoscopy, or colonoscopy.

[10]Newborns.

[11]When staff-assisted depression care supports are in place to assure accurate diagnosis, effective treatment, and follow-up.

[12]All women planning or capable of pregnancy take a daily supplement containing 0.4 to 08. mg (400 to 800 µg) of folic acid.

[13]Sexually active women, including pregnant women 25 and younger, or at increased risk for infection.

[14]Prophylactic ocular topical medication for all newborns against gonococcal ophthalmia neonatorum.

[15]Newborns.

[16]Pregnant women at first prenatal visit.

[17]All adolescents and adults at increased risk for HIV infection and all pregnant women.

[18]Routine iron supplementation for asymptomatic children aged 6 to 12 months who are at increased risk for iron deficiency anemia.

[19]Routine screening in asymptomatic pregnant women.

[20]Men aged 20-35 and women over age 20 who are at increased risk for coronary heart disease; all men aged 35 and older.

[21]Adolescents (age 12-18) when systems are in place to ensure accurate diagnosis, psychotherapy, and follow-up.

[22]Intensive counseling and behavioral interventions to promote sustained weight loss for obese adults.

[23]Screen children aged 6 years and older for obesity and offer them or refer them to comprehensive, intensive behavioral interventions to promote improvement in weight status.

[24]Women 65 and older and women 60 and older at increased risk for osteoporotic fractures.

[25]Newborns.

[26]Blood typing and antibody testing at first pregnancy-related visit. Repeated antibody testing for unsensitized Rh (D)-negative women at 24-28 weeks gestation unless biological father is known to be Rh (D) negative.

[27]All sexually active adolescents and adults at increased risk for STIs.

[28]Newborns

[29]Persons at increased risk and all pregnant women.

[30]Ask all adults about tobacco use and provide tobacco cessation interventions for those who use tobacco; provide augmented, pregnancy-tailored counseling for those pregnant women who smoke.

[31]Asymptomatic adults with sustained blood pressure greater than 135/80 mg Hg.

[32]To detect amblyopia, strabismus, and defects in visual acuity.

Section 2.

Recommendations for Adults

All recommendation statements in this Guide are abridged. To see the full recommendation statements and recommendations published after March 2010, go to http://www.USPreventiveServicesTaskForce.org.

Aspirin or Nonsteroidal Anti-inflammatory Drugs for the Primary Prevention of Colorectal Cancer

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends against the routine use of aspirin and nonsteroidal anti-inflammatory drugs (NSAIDs) to prevent colorectal cancer in individuals at average risk for colorectal cancer. *Grade: D Recommendation.*

Clinical Considerations

- This recommendation applies to asymptomatic adults at average risk for colorectal cancer, including those with a family history of colorectal cancer, and not to individuals with familial adenomatous polyposis, hereditary nonpolyposis colon cancer syndromes (Lynch I or II), or a history of colorectal cancer or adenomas.
- Clinicians should continue to discuss aspirin chemoprophylaxis with patients who are at increased risk for coronary heart disease, but there is good evidence that low-dose aspirin used to prevent coronary heart disease (CHD) events in those at increased risk for CHD does not lead to a reduced

incidence of colorectal cancer. Aspirin use by patients at increased risk for coronary heart disease has been shown to reduce all-cause mortality. The evidence and recommendation statements from the USPSTF for aspirin chemoprophylaxis can be found on the USPSTF Web site (http://www.USPreventiveServicesTaskForce.org).

- More than 80% of colorectal cancers arise from adenomatous polyps. However, most adenomatous polyps will not progress to cancer. Age represents a major risk factor for colorectal cancer, with approximately 90% of cases occurring after age 50 years. Thirty to fifty percent of Americans older than age 50 will develop adenomatous polyps. Between 1% and 10% of these polyps will progress to cancer in 5 to 10 years. The risk for a polyp developing into cancer depends on the villous architecture, degree of cytologic dysplasia, size, and total number of polyps.
- All persons older than age 50 who are at average risk for colorectal cancer should be screened for colorectal cancer regardless of their aspirin or NSAID use. The USPSTF recommendation on screening for colorectal cancer can be accessed at http://www.USPreventiveServicesTaskForce.org.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2007; 146(5):361-64.

Screening for Bladder Cancer in Adults

NOTE: The USPSTF was updating its recommendation on this topic during publication of *The Guide to Clinical Preventive Services 2010-2011*. For the most recent recommendation, please visit the USPSTF Web site at: http://www.USPreventiveServicesTaskForce.org or the USPSTF's Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov. You can search the ePSS for recommendations by patient age, sex, and pregnancy status, and you can download the recommendations as well as receive automatic updates to your PDA.

Genetic Risk Assessment and *BRCA* Mutation Testing for Breast and Ovarian Cancer Susceptibility

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends against routine referral for genetic counseling or routine breast cancer susceptibility gene *(BRCA)* testing for women whose family history is not associated with an increased risk for deleterious mutations in breast cancer susceptibility gene 1 *(BRCA1)* or breast cancer susceptibility gene 2 *(BRCA2)*. *Grade: D Recommendation.*

The USPSTF recommends that women whose family history is associated with an increased risk for deleterious mutations in *BRCA1* or *BRCA2* genes be referred for genetic counseling and evaluation for *BRCA* testing. *Grade: B Recommendation.*

Clinical Considerations

- These recommendations apply to women who have not received a diagnosis of breast or ovarian cancer. They do not apply to women with a family history of breast or ovarian cancer that includes a relative with a known deleterious mutation in *BRCA1* or *BRCA2* genes; these women should be referred for genetic counseling. These recommendations do not apply to men.

- Although there currently are no standardized referral criteria, women with an increased-risk family history should be considered for genetic counseling to further evaluate their potential risks.
- Certain specific family history patterns are associated with an increased risk for deleterious mutations in the *BRCA1* or *BRCA2* gene. Both maternal and paternal family histories are important. For non-Ashkenazi Jewish women, these patterns include 2 first-degree relatives with breast cancer, 1 of whom received the diagnosis at age 50 years or younger; a combination of 3 or more first- or second-degree relatives with breast cancer regardless of age at diagnosis; a combination of both breast and ovarian cancer among first- and second-degree relatives; a first-degree relative with bilateral breast cancer; a combination of 2 or more first- or second-degree relatives with ovarian cancer regardless of age at diagnosis; a first- or second-degree relative with both breast and ovarian cancer at any age; and a history of breast cancer in a male relative.
- For women of Ashkenazi Jewish heritage, an increased-risk family history includes any first-degree relative (or 2 second-degree relatives on the same side of the family) with breast or ovarian cancer.
- About 2 percent of adult women in the general population have an increased-risk family history as defined here. Women with none of these family history patterns have a low probability of having a deleterious mutation in *BRCA1* or *BRCA2* genes.

- Computational tools are available to predict the risk for clinically important *BRCA* mutations (that is, *BRCA* mutations associated with the presence of breast cancer, ovarian cancer, or both), but these tools have not been verified in the general population. There is no empirical evidence concerning the level of risk for a *BRCA* mutation that merits referral for genetic counseling.
- Not all women with a potentially deleterious *BRCA* mutation will develop breast or ovarian cancer. In a woman who has a clinically important *BRCA* mutation, the probability of developing breast or ovarian cancer by age 70 years is estimated to be 35 percent to 84 percent for breast cancer and 10 percent to 50 percent for ovarian cancer.
- Appropriate genetic counseling helps women make informed decisions, can improve their knowledge and perception of absolute risk for breast and ovarian cancer, and can often reduce anxiety. Genetic counseling includes elements of counseling; risk assessment; pedigree analysis; and, in some cases, recommendations for testing for *BRCA* mutations in affected family members, the presenting patient, or both. It is best delivered by a suitably trained health care provider.
- A *BRCA* test is typically ordered by a physician. When done in concert with genetic counseling, the test assures the linkage of testing with appropriate management decisions. Genetic testing may lead to potential adverse ethical, legal, and social consequences, such as insurance and employment

discrimination; these issues should be discussed in the context of genetic counseling and evaluation for testing.

- Among women with *BRCA1* or *BRCA2* mutations, prophylactic mastectomy or oophorectomy decreases the incidence of breast and ovarian cancer; there is inadequate evidence for mortality benefits. Chemoprevention with selective estrogen receptor modulators may decrease incidence of estrogen receptor-positive breast cancer; however, it is also associated with adverse effects, such as pulmonary embolism, deep venous thrombosis, and endometrial cancer. Most breast cancer associated with *BRCA1* mutations is estrogen receptor-negative and thus is not prevented by tamoxifen. Intensive screening with mammography has poor sensitivity, and there is no evidence of benefit of intensive screening for women with *BRCA1* or *BRCA2* gene mutations. Magnetic resonance imaging (MRI) may detect more cases of cancer, but the effect on mortality is not clear.
- Women with an increased-risk family history are at risk not only for deleterious *BRCA1* or *BRCA2* mutations but potentially for other unknown mutations as well. Women with an increased-risk family history who have negative results on tests for *BRCA1* and *BRCA2* mutations may also benefit from surgical prophylaxis.

This USPSTF recommendation was first published in: *Ann Intern Med*. 2005; 143:355-361.

Chemoprevention of Breast Cancer

NOTE: The USPSTF was updating its recommendation on this topic during publication of *The Guide to Clinical Preventive Services 2010-2011*. For the most recent recommendation, please visit the USPSTF Web site at: http://www.USPreventiveServicesTaskForce.org or the USPSTF's Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov. You can search the ePSS for recommendations by patient age, sex, and pregnancy status, and you can download the recommendations as well as receive automatic updates to your PDA.

Screening for Breast Cancer (2009)

Summary of 2009 Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends biennial screening mammography for women aged 50 to 74 years. *Grade: B Recommendation.*

The decision to start regular, biennial screening mammography before the age of 50 years should be an individual one and take patient context into account, including the patient's values regarding specific benefits and harms. *Grade: C Recommendation.*

The USPSTF concludes that the current evidence is insufficient to assess the additional benefits and harms of screening mammography in women 75 years or older. *Grade: I Statement.*

The USPSTF recommends against teaching breast self-examination (BSE). *Grade: D Recommendation.*

The USPSTF concludes that the current evidence is insufficient to assess the additional benefits and harms of clinical breast examination (CBE) beyond screening mammography in women 40 years or older. *Grade: I Statement.*

The USPSTF concludes that the current evidence is insufficient to assess the additional benefits and harms of either digital mammography or magnetic resonance imaging (MRI) instead of film mammography as screening modalities for breast cancer. *Grade: I Statement.*

Clinical Considerations

- This recommendation statement applies to women 40 years or older who are not at increased risk for breast cancer by virtue of a known underlying genetic mutation or a history of chest radiation.
- Increasing age is the most important risk factor for breast cancer for most women. Women without known deleterious genetic mutations (such as *BRCA1* or *BRCA2*) may still have other demographic, physical, or historical risk factors for breast cancer, but none conveys a clinically important absolute increased risk for cancer.
- In recent decades, the early detection of breast cancer has been accomplished by physical examination by a clinician (CBE), by a woman herself (BSE), or by mammography. Standardization of mammography practices enacted by the Mammography Quality Standards Act have led to improved mammography quality. Clinicians should refer patients to Mammography Quality Standards Act-certified facilities, a list of which is available at

http://www.fda.gov/cdrh/mammography/certified.html.

- In trials that demonstrated the effectiveness of mammography in decreasing breast cancer mortality, screening was performed every 12 to 33 months. The evidence reviewed by the USPSTF indicates that a large proportion of the benefit of screening mammography is maintained by biennial screening, and changing from annual to biennial screening is likely to reduce the harms of mammography screening by nearly half. At the same time, benefit may be reduced when extending the interval beyond 24 months; therefore the USPSTF recommends biennial screening.
- Effective treatments, including radiation, chemotherapy (including hormonal treatment), and surgery, are available for invasive carcinoma. Although the standard treatments women receive for ductal carcinoma in situ (DCIS) include surgical approaches as well as radiation and hormonal therapy, considerable debate exists about the optimal treatment strategy for this condition.

Clinical Breast Examination

Potential Preventable Burden. The evidence for CBE, although indirect, suggests that CBE may detect a substantial proportion of cases of cancer if it is the only screening test available. In parts of the world where mammography is infeasible or unavailable (such as India), CBE is being investigated in this way.

Potential Harms. The potential harms of CBE are thought to be small but include false-positive test results, which lead to anxiety and breast cancer worry, as well as repeated visits and unwarranted imaging and biopsies.

Costs. The principal cost of CBE is the opportunity cost incurred by clinicians in the patient encounter.

Current Practice. Surveys suggest that the CBE technique used in the United States currently lacks a standard approach and reporting standards. Clinicians who are committed to spending the time on CBE would benefit their patients by considering the evidence in favor of a structured, standardized examination.

Digital Mammography

Potential Preventable Burden. Digital mammography detects some cases of cancer not identified by film mammography; film mammography detects some cases of cancer not identified by digital mammography. Overall detection is similar for many women. For women who are younger than 50 years or have dense breast tissue, overall detection is somewhat higher with digital mammography. It is not clear whether this additional detection would lead to reduced mortality from breast cancer.

Potential Harms. The possibility of false-positive test results is similar for film and digital mammography. It is uncertain whether overdiagnosis occurs more with digital mammography than with film mammography.

Costs. Digital mammography is more expensive than film mammography.

Current Practice. Some clinical practices are now switching their mammography equipment from film to digital. This may curtail the availability of film mammography in some areas.

Magnetic Resonance Imaging

Potential Preventable Burden. Studies of the use of contrast-enhanced MRI for breast cancer screening have been conducted only in very high-risk populations. In these studies, MRI detected more cases of cancer than did mammography. It is unknown whether detecting these additional cases of cancer would lead to reduced breast cancer mortality.

Potential Harms. Contrast-enhanced MRI requires the injection of contrast material. Studies of MRI screening have shown that MRI yields many more false-positive results than does mammography. Magnetic resonance imaging has the potential to be associated with a greater degree of overdiagnosis than mammography.

Costs. Magnetic resonance imaging is much more expensive than either film or digital mammography.

Current Practice. Magnetic resonance imaging is not currently used for screening women at average risk for breast cancer.

Screening Mammography in Women 75 Years or Older

Potential Preventable Burden. No women 75 years or older have been included in the multiple randomized clinical trials of breast cancer screening. Breast cancer is a leading cause of death in older women, which might suggest that the benefits of screening could be important at this age. However, 3 facts suggest that benefits from screening would probably be smaller for this age group than for women aged 60 to 69 years and probably decrease with increasing age: 1) the benefits of screening occur only several years after the actual screening test, whereas the percentage of women who survive long enough to benefit decreases with age; 2) a higher percentage of the type of breast cancer detected in this age group is the more easily treated estrogen receptor-positive type; and 3) women of this age are at much greater risk for dying of other conditions that would not be affected by breast cancer screening.

Potential Harms. Screening detects not only cancer that could lead to a woman's death but also cancer that will not shorten a woman's life. Women cannot benefit from—but can be harmed by—the discovery and treatment of this second type of cancer, which includes both cancer that might some day become clinically apparent and cancer that never will. Detection of cancer that would never have become clinically apparent is called overdiagnosis, and it is usually followed by overtreatment. Because of a shortened life

span among women 75 years or older, the probability of overdiagnosis and unnecessary earlier treatment increases dramatically after about age 70 or 75 years. Overdiagnosis and unnecessary earlier treatment are important potential harms from screening women in this age group.

Current Practice. Studies show that many women 75 years or older are currently being screened.

This USPSTF recommendation was first published in: *Ann Intern Med* 2009; 151:716-726.

Screening for Breast Cancer (2002)

NOTE: The Department of Health and Human Services, in implementing the Affordable Care Act, uses the 2002 recommendation on Breast Cancer Screening, below. The USPSTF provides this information to assist primary care clinicians as they discuss insurance and coverage issues with their patients.

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends screening mammography, with or without clinical breast examination (CBE), every 1-2 years for women aged 40 and older. *Grade: B Recommendation.*

The USPSTF concludes that the evidence is insufficient to recommend for or against routine CBE alone to screen for breast cancer. *Grade: I Statement.*

The USPSTF concludes that the evidence is insufficient to recommend for or against teaching or performing routine breast self-examination (BSE). *Grade: I Statement.*

Clinical Considerations

- The precise age at which the benefits from screening mammography justify the potential harms is a subjective judgment and should take into account patient preferences. Clinicians should inform women about the potential benefits (reduced chance of dying from breast cancer), potential harms (e.g., false-positive results, unnecessary biopsies), and

limitations of the test that apply to women their age. Clinicians should tell women that the balance of benefits and potential harms of mammography improves with increasing age for women between the ages of 40 and 70.

- Women who are at increased risk for breast cancer (e.g., those with a family history of breast cancer in a mother or sister, a previous breast biopsy revealing atypical hyperplasia, or first childbirth after age 30) are more likely to benefit from regular mammography than women at lower risk. The recommendation for women to begin routine screening in their 40s is strengthened by a family history of breast cancer having been diagnosed before menopause.

- The USPSTF did not examine whether women should be screened for genetic mutations (e.g., *BRCA1* and *BRCA2*) that increase the risk for developing breast cancer, or whether women with genetic mutations might benefit from earlier or more frequent screening for breast cancer.

- In the trials that demonstrated the effectiveness of mammography in lowering breast cancer mortality, screening was performed every 12-33 months. For women aged 50 and older, there is little evidence to suggest that annual mammography is more effective than mammography done every other year. For women aged 40-49, available trials also have not reported a clear advantage of annual mammography over biennial mammography. Nevertheless, some

experts recommend annual mammography based on the lower sensitivity of the test and on evidence that tumors grow more rapidly in this age group.

- The precise age at which to discontinue screening mammography is uncertain. Only 2 randomized controlled trials enrolled women older than 69 and no trials enrolled women older than 74. Older women face a higher probability of developing and dying from breast cancer but also have a greater chance of dying from other causes. Women with comorbid conditions that limit their life expectancy are unlikely to benefit from screening.

- Clinicians should refer patients to mammography screening centers with proper accreditation and quality assurance standards to ensure accurate imaging and radiographic interpretation. Clinicians should adopt office systems to ensure timely and adequate follow-up of abnormal results. A listing of accredited facilities is available at http://www.fda.gov/cdrh/mammography/certified.html.

- Clinicians who advise women to perform BSE or who perform routine CBE to screen for breast cancer should understand that there is currently insufficient evidence to determine whether these practices affect breast cancer mortality, and that they are likely to increase the incidence of clinical assessments and biopsies.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2002; 137 (Part 1):344-346.

Screening for Cervical Cancer

NOTE: An update to this recommendation is in progress. Please visit our Web site at http://www.USPreventiveServicesTaskForce.org or the USPSTF's Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov for the most current recommendation.

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) strongly recommends screening for cervical cancer in women who have been sexually active and have a cervix. *Grade: A Recommendation.*

The USPSTF recommends against routinely screening women older than age 65 for cervical cancer if they have had adequate recent screening with normal Pap smears and are not otherwise at high risk for cervical cancer (go to *Clinical Considerations*). *Grade: D Recommendation.*

The USPSTF recommends against routine Pap smear screening in women who have had a total hysterectomy for benign disease. *Grade: D Recommendation.*

The USPSTF concludes that the evidence is insufficient to recommend for or against the routine use of new technologies to screen for cervical cancer. *Grade: I Statement.*

The USPSTF concludes that the evidence is insufficient to recommend for or against the routine use of human papillomavirus (HPV) testing as a primary screening test for cervical cancer. *Grade: I Statement.*

Clinical Considerations

- The goal of cytologic screening is to sample the transformation zone, the area where physiologic transformation from columnar endocervical epithelium to squamous (ectocervical) epithelium takes place and where dysplasia and cancer arise. A meta-analysis of randomized trials supports the combined use of an extended tip spatula to sample the ectocervix and a cytobrush to sample the endocervix.
- The optimal age to begin screening is unknown. Data on natural history of HPV infection and the incidence of high-grade lesions and cervical cancer suggest that screening can safely be delayed until 3 years after onset of sexual activity or until age 21, whichever comes first. Although there is little value in screening women who have never been sexually active, many U.S. organizations recommend routine screening by age 18 or 21 for all women, based on the generally high prevalence of sexual activity by that age in the U.S. and concerns that clinicians may not always obtain accurate sexual histories.
- Discontinuation of cervical cancer screening in older women is appropriate, provided women have had adequate recent screening with normal Pap results. The optimal age to discontinue screening is not clear, but risk of cervical cancer and yield of screening decline steadily through middle age. The USPSTF found evidence that yield of screening was low in previously screened women after age 65. New

American Cancer Society (ACS) recommendations suggest stopping cervical cancer screening at age 70. Screening is recommended in older women who have not been previously screened, when information about previous screening is unavailable, or when screening is unlikely to have occurred in the past (e.g., among women from countries without screening programs). Evidence is limited to define "adequate recent screening." The ACS guidelines recommend that older women who have had three or more documented, consecutive, technically satisfactory normal/negative cervical cytology tests, and who have had no abnormal/positive cytology tests within the last 10 years, can safely stop screening.

- The USPSTF found no direct evidence that annual screening achieves better outcomes than screening every 3 years. Modeling studies suggest little added benefit of more frequent screening for most women. The majority of cervical cancers in the United States occur in women who have never been screened or who have not been screened within the past 5 years; additional cases occur in women who do not receive appropriate follow-up after an abnormal Pap smear. Because sensitivity of a single Pap test for high-grade lesions may only be 60-80%, however, most organizations in the United States recommend that annual Pap smears be performed until a specified number (usually two or three) are cytologically normal before lengthening the screening interval. The ACS guidelines suggest

waiting until age 30 before lengthening the screening interval; the American College of Obstetricians and Gynecologists (ACOG) identifies additional risk factors that might justify annual screening, including a history of cervical neoplasia, infection with HPV or other sexually transmitted diseases (STDs), or high-risk sexual behavior, but data are limited to determine the benefits of these strategies.

- Discontinuation of cytological screening after total hysterectomy for benign disease (e.g., no evidence of cervical neoplasia or cancer) is appropriate given the low yield of screening and the potential harms from false-positive results in this population. Clinicians should confirm that a total hysterectomy was performed (through surgical records or inspecting for absence of a cervix); screening may be appropriate when the indications for hysterectomy are uncertain. ACS and ACOG recommend continuing cytologic screening after hysterectomy for women with a history of invasive cervical cancer or DES exposure due to increased risk for vaginal neoplasms, but data on the yield of such screening are sparse.
- A majority of cases of invasive cervical cancer occur in women who are not adequately screened. Clinicians, hospitals, and health plans should develop systems to identify and screen the subgroup of women who have had no screening or who have had inadequate past screening.

- Newer Food and Drug Administration (FDA)-approved technologies, such as the liquid-based cytology (e.g., ThinPrep®), may have improved sensitivity over conventional Pap smear screening, but at a considerably higher cost and possibly with lower specificity. Even if sensitivity is improved, modeling studies suggest these methods are not likely to be cost-effective unless used with screening intervals of 3 years or longer. Liquid-based cytology permits testing of specimens for HPV, which may be useful in guiding management of women whose Pap smear reveals atypical squamous cells. HPV DNA testing for primary cervical cancer screening has not been approved by the FDA and its role in screening remains uncertain.

This USPSTF recommendation was first published by: Agency for Healthcare Research and Quality, Rockville, MD. January 2003. http://www.USPreventiveServicesTaskForce.org.

Screening for Colorectal Cancer

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends screening for colorectal cancer using fecal occult blood testing, sigmoidoscopy, or colonoscopy in adults, beginning at age 50 years and continuing until age 75 years. The risks and benefits of these screening methods may vary. *Grade: A Recommendation.*

The USPSTF recommends against routine screening for colorectal cancer in adults 76 to 85 years of age. There may be considerations that support colorectal cancer screening in an individual patient. *Grade: C Recommendation.*

The USPSTF recommends against screening for colorectal cancer in adults older than age 85 years. *Grade: D Recommendation.*

The USPSTF concludes that the evidence is insufficient to assess the benefits and harms of computed tomographic colonography and fecal DNA testing as screening modalities of colorectal cancer. *Grade: I Statement.*

Clinical Considerations

- These recommendations apply to adults 50 years of age and older, excluding those with specific inherited syndromes (the Lynch syndrome of familial adenomatous polyposis) and those with inflammatory bowel disease. The recommendations do apply to those with first-degree relatives who

have had colorectal adenomas or cancer, although for those with first-degree relatives who developed cancer at a younger age or those with multiple affected first-degree relatives, an earlier start to screening may be reasonable. Data suggest that colorectal cancer has a higher mortality rate in African Americans. The reasons for this differential are not well known, and the recommendations are intended to apply to all ethnic and racial groups.

When the screening test results in the diagnosis of clinically significant colorectal adenomas or cancer, the patient will be followed by a surveillance regimen and recommendations for screening are no longer applicable. The USPSTF did not address evidence for the effectiveness of any particular surveillance regimen after diagnosis and/or removal of adenomatous polyps.

- The relative sensitivity and specificity of the different colorectal screening tests with adequate data to assess cancer detection—colonoscopy, flexible sigmoidoscopy, and fecal tests—can be depicted as follows:
  - Sensitivity: Hemoccult II < fecal immunochemical tests ≤ Hemoccult SENSA ≈ flexible sigmoidoscopy < colonoscopy
  - Specificity: Hemoccult SENSA < fecal immunochemical tests ≈ Hemoccult II < flexible sigmoidoscopy = colonoscopy

For the operator-dependent tests—flexible sigmoidoscopy, CT colonography, and colonoscopy—better operator training and more experience have a high likelihood of improving sensitivity. Approaches related to certification, such as quality standards and possibly minimum volume requirements, could be used to achieve the goal of improving operator performance and therefore test sensitivity. Assurance of performance of high-quality endoscopy should be part of all screening programs.

Because several screening strategies have similar efficacy, efforts to reduce colon cancer deaths should focus on implementation of strategies that maximize the number of individuals who get screening of some type. The different options for colorectal cancer screening tests are variably acceptable to patients; eliciting patient preferences is one step in improving adherence. Ideally, shared decision making between clinicians and patients would incorporate information on local test availability and quality as well as patient preference.

- Screening for colorectal cancer reduces mortality through detection and treatment of early-stage cancer and detection and removal of adenomatous polyps. The degree to which each of these mechanisms contributes to a reduction in mortality is unknown, although it is likely that the largest reduction in colorectal cancer mortality during the 10 years after initial screening comes from the detection and removal of early-stage cancer. Colonoscopy is a necessary step in any screening

program that reduces mortality from colorectal cancer. This reduction in mortality does come at the expense of significant morbidity associated with colonoscopy. Evidence does not currently allow a differential estimate of colonoscopy-related morbidity for different age groups or for examinations done with or without biopsy.

In this context, the best measure for the morbidity that results from any screening program for colorectal cancer is the number of colonoscopies required to achieve a reduction in mortality. Although improvements in mortality will generally be associated with increasing morbidity that results from the screening and surveillance program, the goal of a screening program should be to maximize the number of life-years gained while minimizing the harms.

In a report prepared for the USPSTF by 2 groups in the Cancer Intervention and Surveillance Modeling Network (CISNET), investigators conducted microsimulation analyses that applied programs of screening to standard populations of adults in the United States. These analyses permitted a comparison of expected outcomes among testing strategies involving the fecal tests, flexible sigmoidoscopy, or colonoscopy (as noted below). In the models, the predicted total number of colonoscopies included those resulting from surveillance after detection of colorectal neoplasia. The models assumed lifetime monitoring by colonoscopy every 3 to 5 years depending on the

number and size of the adenomas detected. It is not the intent of the USPSTF to endorse this particular approach to surveillance, but standardizing the approach to surveillance is necessary to compare screening strategies in the models.

For all screening modalities, starting screening at age 50 resulted in a balance between life-years gained and colonoscopy risks that was more favorable than commencing screening earlier. Despite the increasing incidence of colorectal adenomas with age, for individuals previously screened the gain in life-years associated with extending screening from age 75 years to 85 years was small in comparison to the risks of screening people in this decade. For adults who have not previously been screened, decisions about first-time screening in this age group should be made in the context of the individual's health status and competing risks, given that the benefit of screening is not seen in trials until at least 7 years later. For persons older than 85 years, competing causes of mortality preclude a mortality benefit that outweighs the harms.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2008; 149(9):627-638.

Lung Cancer Screening

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) concludes that the evidence is insufficient to recommend for or against screening asymptomatic persons for lung cancer with either low dose computerized tomography (LDCT), chest x-ray (CXR), sputum cytology, or a combination of these tests. *Grade: I Statement.*

Clinical Considerations

- The benefit of screening for lung cancer has not been established in any group, including asymptomatic high-risk populations such as older smokers. The balance of harms and benefits becomes increasingly unfavorable for persons at lower risk, such as nonsmokers.
- The sensitivity of LDCT for detecting lung cancer is 4 times greater than the sensitivity of CXR. However, LDCT is also associated with a greater number of false-positive results, more radiation exposure, and increased costs compared with CXR.
- Because of the high rate of false-positive results, many patients will undergo invasive diagnostic procedures as a result of lung cancer screening. Although the morbidity and mortality rates from these procedures in asymptomatic individuals are

not available, mortality rates due to complications from surgical interventions in symptomatic patients reportedly range from 1.3% to 11.6%; morbidity rates range from 8.8% to 44%, with higher rates associated with larger resections.

- Other potential harms of screening are potential anxiety and concern as a result of false-positive tests, as well as possible false reassurance because of false-negative results. However, these harms have not been adequately studied.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2004; 140:738-739.

Screening for Oral Cancer

NOTE: An update to this recommendation is in progress. Please visit the USPSTF Web site at http://www.USPreventiveServicesTaskForce.org or the Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov for the most current recommendation.

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) concludes that the evidence is insufficient to recommend for or against routinely screening adults for oral cancer. *Grade: I Statement.*

Clinical Considerations

- Direct inspection and palpation of the oral cavity is the most commonly recommended method of screening for oral cancer, although there are little data on the sensitivity and specificity of this method. Screening techniques other than inspection and palpation are being evaluated but are still experimental.
- Tobacco use in all forms is the biggest risk factor for oral cancer. Alcohol abuse combined with tobacco use increases risk.
- Clinicians should be alert to the possibility of oral cancer when treating patients who use tobacco or alcohol.

- Patients should be encouraged to not use tobacco and to limit alcohol use in order to decrease their risk for oral cancer as well as heart disease, stroke, lung cancer, and cirrhosis.

This USPSTF recommendation was first published by: Agency for Healthcare Research and Quality, Rockville, MD. February 2004. http://www.USPreventiveServicesTaskForce.org.

Screening for Ovarian Cancer

NOTE: An update to this recommendation is in progress. Please visit the USPSTF Web site at http://www.USPreventiveServicesTaskForce.org or the Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov for the most current recommendation.

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends against routine screening for ovarian cancer. *Grade: D Recommendation.*

Clinical Considerations

- There is no existing evidence that any screening test, including CA-125, ultrasound, or pelvic examination, reduces mortality from ovarian cancer. Furthermore, existing evidence that screening can detect early-stage ovarian cancer is insufficient to indicate that this earlier diagnosis will reduce mortality.
- Because there is a low incidence of ovarian cancer in the general population (age-adjusted incidence of 17 per 100,000 women), screening for ovarian cancer is likely to have a relatively low yield. The great majority of women with a positive screening test will not have ovarian cancer (i.e., they will have a false-positive result). In women at average risk, the positive predictive value of an abnormal screening test is, at best, approximately 2% (i.e., 98% of

women with positive test results will not have ovarian cancer).

- The positive predictive value of an initially positive screening test would be more favorable for women at higher risk. For example, the lifetime probability of ovarian cancer increases from about 1.6% in a 35-year-old woman without a family history of ovarian cancer to about 5% if she has 1 relative and 7% if she has 2 relatives with ovarian cancer. If ongoing clinical trials show that screening has a beneficial effect on mortality rates, then women at higher risk are likely to experience the greatest benefit.

This USPSTF recommendation was first published in: *Ann Fam Med.* 2004; 2:260-262.

Screening for Pancreatic Cancer

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends against routine screening for pancreatic cancer in asymptomatic adults using abdominal palpation, ultrasonography, or serologic markers. *Grade: D Recommendation.*

Clinical Considerations

- Due to the poor prognosis of those diagnosed with pancreatic cancer, there is an interest in primary prevention. The evidence for diet-based prevention of pancreatic cancer is limited and conflicting. Some experts recommend lifestyle changes that may help to prevent pancreatic cancer, such as stopping the use of tobacco products, moderating alcohol intake, and eating a balanced diet with sufficient fruit and vegetables.

- Persons with hereditary pancreatitis may have a higher lifetime risk for developing pancreatic cancer. However, the USPSTF did not review the effectiveness of screening these patients.

This USPSTF recommendation was first published by: Agency for Healthcare Research and Quality, Rockville, MD. February 2004. http://www.USPreventiveServicesTaskForce.org.

Screening for Prostate Cancer

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) concludes that the current evidence is insufficient to assess the balance of benefits and harms of prostate cancer screening in men younger than age 75 years. *Grade: I Statement.*

The USPSTF recommends against screening for prostate cancer in men age 75 years or older. *Grade: D Recommendation.*

Clinical Considerations

- This recommendation applies to men in the general U.S. population.
- Older men, African-American men, and men with a family history of prostate cancer are at increased risk for diagnosis of and death from prostate cancer. Unfortunately, the previously described gaps in the evidence regarding potential benefits of screening also apply to these men.
- The PSA test is more sensitive than the digital rectal examination for detecting prostate cancer. The conventional PSA screening cut-point of 4.0 µg/L detects many cases of prostate cancer; however, some early cases will be missed by this cut-point. Using a lower cut-point to define an abnormal PSA level detects more cases of cancer.

  The proportion of cancer cases detected by lower cutpoints that would ever become clinically

apparent is unknown; lower cut-points would label many more men as potentially having cancer. For example, lowering the PSA cut-point to 2.5 µg/L would more than double the number of U.S. men between 40 and 69 years of age with abnormal results.

Variations of PSA screening, including the use of age-adjusted PSA cut-points, free PSA, PSA density, PSA velocity, PSA slope, and PSA doubling time, have been proposed to improve detection of "clinically important" prostate cancer cases. However, no evidence suggests that any of these testing strategies improves health outcomes.

- Given the uncertainties and controversy surrounding prostate cancer screening in men younger than age 75 years, a clinician should not order the PSA test without first discussing with the patient the potential but uncertain benefits and the known harms of prostate cancer screening and treatment. Men should be informed of the gaps in the evidence and should be assisted in considering their personal preferences before deciding whether to be tested.

- Because of the uncertainty about the benefits of treating prostate cancer detected by screening men younger than age 75 years, there is no consensus regarding optimal treatment. Current management strategies for localized prostate cancer include watchful waiting (observation with palliative treatment for symptoms only), active surveillance

(periodic biochemical monitoring with conversion to curative treatment for signs of disease progression), radical prostatectomy, external-beam radiation therapy, and brachytherapy (or radioactive seed implantation therapy).

If treatment for prostate cancer detected by screening improves health outcomes, the population most likely to benefit from screening will be men age 50 to 74 years. Even if prostate cancer screening is determined to be effective, the length of time required to experience a mortality benefit is greater than 10 years. Because a 75-year-old man has an average life expectancy of about 10 years, very few men age 75 years or older would experience a mortality benefit. Similarly, men younger than age 75 years who have chronic medical problems and a life expectancy of fewer than 10 years are also unlikely to benefit from screening and treatment.

- The yield of screening in terms of cancer cases detected declines rapidly with repeated annual testing. If screening were to reduce deaths, PSA screening as infrequently as every 4 years could yield as much of a benefit as annual screening.
- Shared decision-making resources specific to prostate cancer screening for clinicians and patients are available from the Centers of Disease Control and Prevention (www.cdc.gov/cancer/prostate/publications/).

This USPSTF recommendation was first published in: *Ann Intern Med* 2008; 149:185-191.

Counseling to Prevent Skin Cancer

NOTE: The USPSTF was updating its recommendation on this topic during publication of *The Guide to Clinical Preventive Services 2010-2011*. For the most recent recommendation, please visit the USPSTF Web site at: http://www.USPreventiveServicesTaskForce.org or the USPSTF's Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov. You can search the ePSS for recommendations by patient age, sex, and pregnancy status, and you can download the recommendations as well as receive automatic updates to your PDA.

Screening for Skin Cancer

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) concludes that the current evidence is insufficient to assess the balance of benefits and harms of using whole-body skin examination by a primary care clinician or patient skin self-examination for the early detection of cutaneous melanoma, basal cell cancer, or squamous cell skin cancer in the adult general population. *Grade: I Statement.*

Clinical Considerations

- This recommendation applies to the adult general population without a history of premalignant or malignant lesions. The USPSTF did not examine the outcomes related to surveillance of patients at extremely high risk, such as those with familial syndromes (for example, the familial atypical mole and melanoma syndrome).
- Clinicians should remain alert for skin lesions with malignant features noted in the context of physical examinations performed for other purposes. Asymmetry, border irregularity, color variability, diameter greater than 6 mm (ABCD criteria), or rapidly changing lesions are features associated with an increased risk for cancer. Biopsy of suspicious lesions is warranted.

- Clinicians should be aware that fair-skinned men and women older than 65 years, patients with atypical moles, and those with more than 50 moles constitute known groups at substantially increased risk for melanoma. Other risk factors for skin cancer include family history and a considerable past history of sun exposure and sunburns. Benefits from screening are uncertain, even in high-risk patients.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2009; 150:188-193.

Screening for Testicular Cancer

NOTE: An update to this recommendation is in progress. Please visit the USPSTF Web site at http://www.USPreventiveServicesTaskForce.org or the Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov for the most current recommendation.

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends against routine screening for testicular cancer in asymptomatic adolescent and adult males. *Grade: D Recommendation.*

Clinical Considerations

- The low incidence of testicular cancer and favorable outcomes in the absence of screening make it unlikely that clinical testicular examinations would provide important health benefits. Clinical examination by a physician and self-examination are the potential screening options for testicular cancer. However, little evidence is available to assess the accuracy, yield, or benefits of screening for testicular cancer.
- Although currently most testicular cancers are discovered by patients themselves or their partners, either unintentionally or by self-examination, there is no evidence that teaching young men how to examine themselves for testicular cancer would

improve health outcomes, even among men at high risk, including men with a history of undescended testes or testicular atrophy.

- Clinicians should be aware of testicular cancer as a possible diagnosis when young men present to them with suggestive signs and symptoms. There is some evidence that patients who present initially with symptoms of testicular cancer are frequently diagnosed as having epididymitis, testicular trauma, hydrocele, or other benign disorders. Efforts to promote prompt assessment and better evaluation of testicular problems may be more effective than widespread screening as a means of promoting early detection.

This USPSTF recommendation was first published by: Agency for Healthcare Research and Quality, Rockville, MD. February 2004. http://www.USPreventiveServicesTaskForce.org.

Routine Vitamin Supplementation to Prevent Cancer and Cardiovascular Disease

NOTE: The USPSTF was updating its recommendation on this topic during publication of *The Guide to Clinical Preventive Services 2010-2011*. For the most recent recommendation, please visit our Web site at: http://www.USPreventiveServicesTaskForce.org or the USPSTF's Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov. You can search the ePSS for recommendations by patient age, sex, and pregnancy status, and you can download the recommendations as well as receive automatic updates to your PDA.

Screening for Abdominal Aortic Aneurysm

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends one-time screening for abdominal aortic aneurysm (AAA) by ultrasonography in men aged 65 to 75 who have ever smoked. *Grade: B Recommendation.*

The USPSTF makes no recommendation for or against screening for AAA in men aged 65 to 75 who have never smoked. *Grade: C Recommendation.*

The USPSTF recommends against routine screening for AAA in women. *Grade: D Recommendation.*

Clinical Considerations

- The major risk factors for abdominal aortic aneurysm (AAA) include age (being 65 or older), male sex, and a history of ever smoking (at least 100 cigarettes in a person's lifetime). A first-degree family history of AAA requiring surgical repair also elevates a man's risk for AAA; this may also be true for women but the evidence is less certain. There is

only a modest association between risk factors for atherosclerotic disease and AAA.

- Screening for AAA would most benefit those who have a reasonably high probability of having an AAA large enough, or that will become large enough, to benefit from surgery. In general, adults younger than age 65 and adults of any age who have never smoked are at low risk for AAA and are not likely to benefit from screening. Among men aged 65 to 74, an estimated 500 who have ever smoked—or 1,783 who have never smoked—would need to be screened to prevent 1 AAA-related death in the next 5 years. As always, clinicians must individualize recommendations depending on a patient's risk and likelihood of benefit. For example, some clinicians may choose to discuss screening with male nonsmokers nearing age 65 who have a strong first-degree family history of AAA that required surgery.
- The potential benefit of screening for AAA among women aged 65 to 75 is low because of the small number of AAA-related deaths in this population. The majority of deaths from AAA rupture occur in women aged 80 or older. Because there are many competing health risks at this age, any benefit of screening for AAA would be minimal. Individualization of care, however, is still required. For example, a clinician may choose to discuss screening in the unusual circumstance in which a healthy female smoker in her early 70s has a first-degree family history for AAA that required surgery.

- Operative mortality for open surgical repair of an AAA is 4 to 5 percent, and nearly one-third of patients undergoing this surgery have other important complications (e.g., cardiac and pulmonary). Additionally, men having this surgery are at increased risk for impotence.
- Endovascular repair of AAAs (EVAR) is currently being used as an alternative to open surgical repair. Although recent studies have shown a short-term mortality and morbidity benefit of EVAR compared with open surgical repair, the long-term effectiveness of EVAR to reduce AAA rupture and mortality is unknown. The long-term harms of EVAR include late conversion to open repair and aneurysmal rupture. EVAR performed with older-generation devices is reported to have an annual rate of rupture of 1 percent and conversion to open surgical repair of 2 percent. The conversion to open surgical repair is associated with a peri-operative mortality of about 24 percent. The long-term harms of newer generation EVAR devices are yet to be reported.
- For most men, 75 years may be considered an upper age limit for screening. Patients cannot benefit from screening and subsequent surgery unless they have a reasonable life expectancy. The increased presence of comorbidities for people aged 75 and older decreases the likelihood that they will benefit from screening.

- Ultrasonography has a sensitivity of 95 percent and specificity of nearly 100 percent when performed in a setting with adequate quality assurance. The absence of quality assurance is likely to lower test accuracy. Abdominal palpation has poor accuracy and is not an adequate screening test.
- One-time screening to detect an AAA using ultrasonography is sufficient. There is negligible health benefit in re-screening those who have normal aortic diameter on initial screening.
- Open surgical repair for an AAA of at least 5.5 cm leads to an estimated 43-percent reduction in AAA-specific mortality in older men who undergo screening. However, there is no current evidence that screening reduces all-cause mortality in this population.
- In men with intermediate-sized AAAs (4.0-5.4 cm), periodic surveillance offers comparable mortality benefit to routine elective surgery with the benefit of fewer operations. Although there is no evidence to support the effectiveness of any intervention in those with small AAAs (3.0-3.9 cm), there are expert opinion-based recommendations in favor of periodic repeat ultrasonography for these patients.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2005; 142:198-202.

Aspirin for the Prevention of Cardiovascular Disease

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends the use of aspirin for men age 45 to 79 years when the potential benefit due to a reduction in myocardial infarctions outweighs the potential harm due to an increase in gastrointestinal hemorrhage. *Grade: A Recommendation.*

The USPSTF recommends the use of aspirin for women age 55 to 79 years when the potential benefit of a reduction in ischemic strokes outweighs the potential harm due to an increase in gastrointestinal hemorrhage. *Grade: A Recommendation.*

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of aspirin for cardiovascular disease prevention in men and women 80 years or older. *Grade: I Statement.*

The USPSTF recommends against the use of aspirin for stroke prevention in women younger than 55 years and for myocardial infarction prevention in men younger than 45 years. *Grade: D Recommendation.*

Clinical Considerations

- These recommendations apply to adult men and women without a history of coronary heart disease or stroke.
- Men

  The net benefit of aspirin depends on the initial risk for coronary heart disease events and gastrointestinal bleeding. Thus, decisions about aspirin therapy should consider the overall risks for coronary heart disease and gastrointestinal bleeding.

  Risk assessment for coronary heart disease should include ascertainment of risk factors: age, diabetes, total cholesterol levels, high-density lipoprotein cholesterol levels, blood pressure, and smoking. Available tools provide estimations of coronary heart disease risk (such as the calculator available at http://hp2010.nhlbihin.net/atpiii.calculator.asp).

  Figure 1 shows the estimated number of myocardial infarctions prevented according to coronary heart disease risk level for men age 45 to 79 years—the age range with the potential for substantial net benefit from the use of aspirin. It also shows that the coronary heart disease risk level at which the absolute number of myocardial infarctions prevented by the use of aspirin is greater than the absolute number of gastrointestinal bleeding episodes and hemorrhagic strokes caused by aspirin therapy increases with age. The estimates in Figure 2 were developed assuming that the men are not currently taking nonsteroidal anti-inflammatory

Figure 1. Estimated myocardial infarctions (MIs) prevented and estimated harms of using aspirin for 10 years in a hypothetical cohort of 1000 men

As indicated, the estimated number of MIs prevented varies with 10-year CHD risk. The estimated harms of using aspirin vary with age. Therefore, both 10-year CHD risk and age must be considered when determining whether the potential harms of aspirin use outweigh the potential benefit in terms of MIs prevented. The boldfaced numbers indicate the combinations of 10-year CHD risk and age for which the number of harms (GI bleeding and hemorrhagic stroke) are greater than or approximately equal to the number of MIs prevented.*

Variable	Estimated MIs Prevented (per 1000 Men), *n*		
	Age 45–59 Years	Age 60–69 Years	Age 70–79 Years
10-year CHD risk			
1%	**3.2**	**3.2**	**3.2**
2%	**6.4**	**6.4**	**6.4**
3%	**9.6**	**9.6**	**9.6**
4%	12.8	**12.8**	**12.8**
5%	16	**16**	**16**
6%	19.2	**19.2**	**19.2**
7%	22.4	**22.4**	**22.4**
8%	25.6	**25.6**	**25.6**
9%	28.8	28.8	**28.8**
10%	32	32	**32**
11%	35.2	35.2	**35.2**
12%	38.4	38.4	38.4
13%	41.6	41.6	41.6
14%	44.8	44.8	44.8
15%	48	48	48
16%	51.2	51.2	51.2
17%	54.4	54.4	54.4
18%	57.6	57.6	57.6
19%	60.8	60.8	60.8
20%	64	64	64

continued

Figure 1. Estimated myocardial infarctions (MIs) prevented and estimated harms of using aspirin for 10 years in a hypothetical cohort of 1000 men *(continued)*

Variable	Estimated MIs Prevented (per 1000 Men), *n*		
	Age 45–59 Years	Age 60–69 Years	Age 70–79 Years
	Estimated Harms, *n*		
Type of event			
GI bleeding	8	24	36
Hemorrhagic stroke	1	1	1

* Calculations of estimated benefits and harms rely on assumptions and are by nature somewhat imprecise. Estimates of benefits and harms, especially at the borders of the boldfaced and non-boldfaced areas, should be considered in the full context of clinical decision making and used to stimulate shared decision making. The calculations in the table are based on the following assumptions: that there is a 32% risk reduction of MIs with regular aspirin use and that gastrointestinal bleeding includes serious hemorrhage, perforation, or other complications leading to hospitalization or death. The harm of GI bleeding in the table assumes that the risk for GI bleeding increases with age and that the men are not taking nonsteroidal anti-inflammatory drugs, do not have upper GI pain, or do not have a history of GI ulcer.

Estimates are based on age and 10-year CHD risk. CHD = coronary heart disease; GI = gastrointestinal; MI = myocardial infarction.

drugs (NSAIDs) and are without other conditions that increase the risk for gastrointestinal bleeding (see below). Furthermore, the decision about the exact level of risk at which the potential benefits outweigh potential harms is an individual one. Some men may decide that avoiding a myocardial infarction is of great value and that having a gastrointestinal bleeding event is not a major problem. This group would probably decide to take aspirin at a lower coronary heart disease risk level than men who are more afraid of gastrointestinal bleeding. Men who have a high likelihood of benefiting with little potential for harm should be encouraged to consider aspirin. Conversely, aspirin use should be discouraged among men who have little potential of benefiting from the therapy or have a high risk for gastrointestinal bleeding.

Shared decision making should be encouraged with men for whom the potential benefits and risks for serious bleeding are more closely balanced (Figure 2). This discussion should explore the potential benefits and harms and patient preferences. As the potential benefit increases above potential harms, the recommendation to take aspirin should become stronger.

Evidence on the benefits in men younger than 45 years is limited, and the potential benefit in this age group is probably low because the risk for myocardial infarction is very low.

Figure 2. 10-year CHD risk levels at which the number of cardiovascular disease events prevented is closely balanced to the number of serious bleeding events

Shared decision making is strongly encouraged with persons whose risk is close to (either above or below) these estimates of 10-year risk levels. As the potential cardiovascular disease reduction benefit increases above harms, the recommendation to take aspirin should become stronger.

Men		Women	
Age	**10-Year CHD Risk, %**	**Age**	**10-Year Stroke Risk, %**
45–59 y	≥4	55–59 y	≥3
60–69 y	≥9	60–69 y	≥8
70–79 y	≥12	70–79 y	≥11

CHD = coronary heart disease.

■ Women

The net benefit of aspirin depends on the initial risks for stroke and gastrointestinal bleeding. Thus, decisions about aspirin therapy should consider the overall risk for stroke and gastrointestinal bleeding.

Risk factors for stroke include age, high blood pressure, diabetes, smoking, a history of cardiovascular disease, atrial fibrillation, and left ventricular hypertrophy. Tools for estimation of stroke risk are available (such as the calculator available at http://www.westernstroke.org/PersonalStrokeRisk1.xls).

Figure 3 shows the estimated number of strokes prevented according to stroke risk level in women age 55 to 79 years—the age range for which evidence shows that there could be substantial potential net benefit of aspirin use. It also shows that the stroke risk level at which the absolute number of strokes prevented is greater than the absolute number of gastrointestinal bleeding events caused increases with age. The estimates in Figure 3 were developed assuming that women are not currently taking NSAIDs and are without other conditions that increase the risk for gastrointestinal bleeding. Furthermore, the decision about the exact stroke risk level at which the potential benefits outweigh harms is an individual one. Some women may decide that avoiding a stroke is of great value but experiencing a gastrointestinal bleeding event is not a major problem. These women would probably decide to take aspirin at a lower stroke risk level than those who are more afraid of a bleeding event. Women who have little potential of benefiting from aspirin therapy or have a high risk for gastrointestinal bleeding should be discouraged from taking aspirin.

Shared decision making should be encouraged with women for whom the potential benefits and risks for serious bleeding are more closely balanced (Figure 2). This discussion should explore potential benefits and harms and patient preferences. As the potential stroke reduction benefit increases above the potential harms, the recommendation to take aspirin should become stronger.

Figure 3. Estimated number of strokes prevented and estimated harms of using aspirin for 10 years in a hypothetical cohort of 1000 women on the basis of age and 10-year stroke risk.

As indicated, the estimated number of strokes avoided varies with 10-year stroke risk. The estimated harms of using aspirin vary with age. Therefore, both 10-year stroke risk and age must be considered when determining whether the potential harms of aspirin use outweigh the potential benefit in terms of strokes prevented. The boldfaced numbers indicate the combinations of 10-year stroke risk and age for which the number of harms (GI bleeding) are greater than the number of strokes prevented*

Variable	Estimated Strokes Prevented (per 1000 Women), *n*		
	Age 55–59 Years	Age 60–69 Years	Age 70–79 Years
10-year stroke risk			
1%	**1.7**	**1.7**	**1.7**
2%	**3.4**	**3.4**	**3.4**
3%	5.1	**5.1**	**5.1**
4%	6.8	**6.8**	**6.8**
5%	8.5	**8.5**	**8.5**
6%	10.2	**10.2**	**10.2**
7%	11.9	**11.9**	**11.9**
8%	13.6	13.6	**13.6**
9%	15.3	15.3	**15.3**
10%	17	17	**17**
11%	18.7	18.7	18.7
12%	20.4	20.4	20.4
13%	22.1	22.1	22.1
14%	23.8	23.8	23.8
15%	25.5	25.5	25.5
16%	27.2	27.2	27.2
17%	28.9	28.9	28.9
18%	30.6	30.6	30.6
19%	32.3	32.3	32.3
20%	34	34	34

continued

Figure 3. Estimated number of strokes prevented and estimated harms of using aspirin for 10 years in a hypothetical cohort of 1000 women on the basis of age and 10-year stroke risk. ***(continued)***

Variable	Estimated Strokes Prevented (per 1000 Women), *n*		
	Age 55–59 Years	Age 60–69 Years	Age 70–79 Years
	Estimated Harms, *n*		
Type of event			
GI bleeding	4	12	18

* Calculations of estimated benefits and harms rely on assumptions and are by nature somewhat imprecise. Estimates of benefits and harms, especially at the borders of the boldfaced and non-boldfaced areas, should be considered in the full context of clinical decision making and used to stimulate shared decision making. The calculations in the table are based on the following assumptions: that there is a 17% risk reduction of strokes with regular aspirin use and that gastrointestinal bleeding includes serious hemorrhage, perforation, or other complications leading to hospitalization or death. The harm of GI bleeding in the table assumes that the risk for GI bleeding increases with age and that the women are not taking nonsteroidal anti-inflammatory drugs, do not have upper GI pain, or do not have a history of GI ulcer. "Strokes prevented" is the net reduction of strokes, which includes a decrease in ischemic strokes and a small increase in hemorrhagic strokes.

Evidence on benefits in women younger than 55 years is limited, and the potential benefit in this age group is probably low because the risk for stroke is very low.

- Evidence shows that the risk for gastrointestinal bleeding with and without aspirin use increases with age. For the purposes of making this recommendation, the USPSTF considered age and sex to be the most important risk factors for gastrointestinal bleeding. Other risk factors for bleeding include upper gastrointestinal tract pain, gastrointestinal ulcers, and NSAID use. Nonsteroidal anti-inflammatory drug therapy combined with aspirin approximately quadruples the risk for serious gastrointestinal bleeding compared with the risk with aspirin alone. The rate of serious bleeding in aspirin users is approximately 2 to 3 times greater in patients with a history of a gastrointestinal ulcer. Men have twice the risk for serious gastrointestinal bleeding than women. These risk factors increase the risk for bleeding substantially and should be considered in the overall decision about the balance of benefits and harms of aspirin therapy. Enteric-coated or buffered preparations do not clearly reduce the adverse gastrointestinal effects of aspirin. Uncontrolled hypertension and concomitant use of anticoagulants also increase the risk for serious bleeding.

- The optimum dose of aspirin for preventing cardiovascular disease events is not known. Primary prevention trials have demonstrated benefits with various regimens, including dosages of 75 and 100 mg/d and 100 and 325 mg every other day. A dosage of approximately 75 mg/d seems as effective as higher dosages. The risk for gastrointestinal bleeding may increase with dose.
- Although the optimal timing and frequency of discussions related to aspirin therapy are unknown, a reasonable option might be every 5 years in middle age and later and also whenever other cardiovascular risk factors are detected.
- The incidence of myocardial infarction and stroke is high in persons 80 years or older, and thus the potential benefit of aspirin is large. The relationship between increasing age and gastrointestinal bleeding is also well established, and thus the potential harms are also large. The net benefit of aspirin use in persons older than 80 years is probably best in those without risk factors for gastrointestinal bleeding (other than older age) and in those who could tolerate a gastrointestinal bleeding episode (for example, those with normal hemoglobin levels, good kidney function, and easy access to emergency care). Clinicians should inform patients about the adverse consequences of gastrointestinal bleeding because they might be mitigated by a patient's early

recognition of the signs and symptoms of bleeding (dark stools, vomiting blood, bright red blood per rectum, syncope, and lightheadedness). If clinicians decide to prescribe aspirin in adults older than 80 years, they should do so only after a discussion with the patient that includes the potential harms and uncertain benefits.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2009; 150:396-404.

Screening for Carotid Artery Stenosis

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends against screening for asymptomatic carotid artery stenosis (CAS) in the general adult population. *Grade: D Recommendation.*

Clinical Considerations

- This recommendation applies to adults without neurological signs or symptoms, including a history of transient ischemic attacks or stroke. If otherwise eligible, an individual who has a carotid-area transient ischemic attack should be evaluated promptly for consideration of carotid endarterectomy.
- In a setting of excellent surgical care and low complication rates, screening may benefit patients who have a very high risk for stroke. It is not clear, however, how to identify people whose risk for stroke is high enough to justify screening, yet do not also have a high risk for surgical complications. The major risk factors for CAS include older age, male sex, hypertension, smoking, hypercholesterolemia, and heart disease.
- Available screening and confirmatory tests (duplex ultrasonography, digital subtraction angiography, and magnetic resonance angiography) all have imperfect sensitivity and appreciable harms.

Therefore, screening could lead to non-indicated surgeries that result in serious harms, including death, stroke, and myocardial infarction, in some patients.

- In other recommendations, the USPSTF notes that adults should be screened for hypertension, hyperlipidemia, and smoking. In addition, clinicians should discuss aspirin chemoprevention for those who have an increased risk for cardiovascular disease. The evidence and recommendations for these conditions from the USPSTF are available on the USPSTF Web site at http://www.USPreventiveServicesTaskForce.org.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2007; 147:854-859.

Screening for Chronic Obstructive Pulmonary Disease Using Spirometry

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends against screening adults for chronic obstructive pulmonary disease (COPD) using spirometry. *Grade: D Recommendation.*

Clinical Considerations

- This recommendation applies to healthy adults who do not recognize or report respiratory symptoms to a clinician. It does not apply to individuals with a family history of α1-antitrypsin deficiency. For individuals who present to clinicians reporting chronic cough, increased sputum production, wheezing, or dyspnea, spirometry would be indicated as a diagnostic test for COPD, asthma, and other pulmonary diseases.
- Screening for COPD would theoretically benefit adults with a high probability of severe airflow obstruction who might benefit from inhaled therapies. Risk factors for COPD include current or past tobacco use, exposure to occupational and environmental pollutants, and older age. However, even in groups with the greatest prevalence of airflow obstruction, hundreds of patients would need to be screened with spirometry to defer 1 exacerbation. For example, under the best-case

assumptions about response to therapy, an estimated 455 adults between 60 and 69 years of age would need to be screened to defer 1 exacerbation.

- Spirometry can be performed in a primary care physician's office or in a pulmonary testing laboratory. The USPSTF did not review evidence comparing the accuracy of spirometry performed in the primary care versus referral settings.
- Regardless of the presence or absence of airflow obstruction, all current smokers should receive smoking cessation counseling and be offered pharmacologic therapies demonstrated to increase cessation rates. All patients 50 years of age or older should be offered influenza vaccine annually. All patients 65 years of age or older should be offered pneumococcal vaccine.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2008; 148:529-534.

Screening for Coronary Heart Disease

NOTE: An update to this recommendation is in progress. Please visit the USPSTF Web site at http://www.USPreventiveServicesTaskForce.org or the Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov for the most current recommendation.

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends against routine screening with resting electrocardiography (ECG), exercise treadmill test (ETT), or electron-beam computerized tomography (EBCT) scanning for coronary calcium for either the presence of severe coronary artery stenosis (CAS) or the prediction of coronary heart disease (CHD) events in adults at low risk for CHD events. *Grade: D Recommendation.*

The USPSTF found insufficient evidence to recommend for or against routine screening with ECG, ETT, or EBCT scanning for coronary calcium for either the presence of severe CAS or the prediction of CHD events in adults at increased risk for CHD events. *Grade: I Statement.*

Clinical Considerations

- Several factors are associated with a higher risk for CHD events (the major ones are nonfatal myocardial infarction and coronary death), including older age, male gender, high blood

pressure, smoking, abnormal lipid levels, diabetes, obesity, and sedentary lifestyle. A person's risk for CHD events can be estimated based on the presence of these factors. Calculators are available to ascertain a person's risk for having a CHD event; for example, a calculator to estimate a person's risk for a CHD event in the next 10 years can be accessed at http://hp2010.nhlbihin.net/atpiii.calculator.asp. Although the exact risk factors that constitute each of these categories (low or increased risk) have not been established, younger adults (i.e., men < 50 years and women < 60 years) who have no other risk factors for CHD (< 5%-10% 10-year risk) are considered to be at low risk. Older adults, or younger adults with 1 or more risk factors (> 15% -20% 10-year risk), are considered to be at increased risk.

- Screening with ECG, ETT, and EBCT could potentially reduce CHD events in 2 ways: either by detecting people at high risk for CHD events who could benefit from more aggressive risk factor modification, or by detecting people with existing severe CAS whose life could be prolonged by coronary artery bypass grafting (CABG) surgery. However, the evidence is inadequate to determine the extent to which people detected through screening in either situation would benefit from either type of intervention.

- The consequences of false-positive tests may potentially outweigh the benefits of screening. False-positive tests are common among asymptomatic adults, especially women, and may lead to unnecessary diagnostic testing, over-treatment, and labeling.
- Because the sensitivity of these tests is limited, screening could also result in false-negative results. A negative test does not rule out the presence of severe CAS or a future CHD event.
- For people in certain occupations, such as pilots and heavy equipment operators (for whom sudden incapacitation or sudden death may endanger the safety of others), considerations other than the health benefit to the individual patient may influence the decision to screen for CHD.
- Although some exercise programs initially screen asymptomatic participants with ETT, there is not enough evidence to determine the balance of benefits and harms of this practice.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2004; 140:569-572.

Using Nontraditional Risk Factors in Coronary Heart Disease Risk Assessment

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) concludes that the evidence is insufficient to assess the balance of benefits and harms of using the nontraditional risk factors discussed in this statement to screen asymptomatic men and women with no history of CHD to prevent CHD events. *Grade: I Statement.*

The nontraditional risk factors included in this recommendation are high-sensitivity C-reactive protein (hs-CRP), ankle-brachial index (ABI), leukocyte count, fasting blood glucose level, periodontal disease, carotid intima-media thickness (carotid IMT), coronary artery calcification (CAC) score on electron-beam computed tomography (EBCT), homocysteine level, and lipoprotein(a) level.

Clinical Considerations

- The USPSTF intends this recommendation for asymptomatic men and women with no history of CHD, diabetes, or any CHD risk equivalent.
- Clinicians should use the Framingham model to assess CHD risk and to guide risk-based therapy until further evidence is obtained. (See the Other Considerations section for a discussion of risk calculators.)

Because adding nontraditional risk factors to CHD assessment requires additional patient and clinical staff time and effort, routinely screening with nontraditional risk factors could result in lost opportunities for provision of other important health services of proven benefit.

- This recommendation is to be used for those who fall into a 10% to 20% (intermediate) 10-year risk category after being screened for CHD risk by using traditional CHD risk factors. Using a risk assessment tool is a key step in managing CHD risk in patients. One validated method of assessing CHD risk is the Framingham model. Persons with low (<10%) Framingham risk scores do not benefit from aggressive risk factor modification, whereas those with high (>20%) Framingham risk scores do benefit. Examples of persons who fall into the intermediate-risk category include a 60-year-old male smoker with untreated hypertension or a 60-year-old female with untreated hypertension and hyperlipidemia. The current recommendation used the Adult Treatment Panel III (ATP III) Framingham risk calculator (available at http://hp2010.nhlbihin.net/atpiii/calculator.asp?usertype.prof) and does not include diabetic populations.
- About 31% of asymptomatic U.S. men and 7% of U.S. women age 40 to 79 years without diabetes will fall into the intermediate-risk category. No evidence or consensus is available regarding how to treat and counsel these persons.

Other Considerations

Costs

- Because of limitations in the evidence of effectiveness, little information is available on the cost-effectiveness of using nontraditional risk factors in CHD screening. When the evidence for effectiveness is clearer, evaluating cost-effectiveness will be a research priority.

Research Needs and Gaps

- For hs-CRP, ABI, and EBCT, high priority should be given to determining the benefits and harms of aggressive treatment of persons reclassified from intermediate to high risk on the basis of additional information obtained from these tests.
- For hs-CRP and ABI, future priority should be given to studies that assess the health effect of reclassifying those at high and intermediate risk for CHD events into lower-risk categories on the basis of this assessment. Similar studies for EBCT would be useful.
- The predictive value and prevalence of periodontal disease, carotid IMT, and lipoprotein(a) should be examined in conjunction with traditional Framingham risk factors for predicting CHD events and death.

- Various risk models for CHD are available. Some consider diabetes as a CHD equivalent and others use it as a risk factor for CHD. The predictive value and prevalence of nontraditional risk factors for predicting CHD events and death should be examined specifically in diabetic populations.
- Several risk calculators are available that use data from the Framingham studies; 2 of the most commonly used are the ATP III and the traditional Framingham risk calculator (available at www.intmed.mcw.edu/clincalc/heartrisk.html). Evidence for this recommendation relied on the risk estimation from the ATP III calculator.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2009; 151:474-482.

Screening for High Blood Pressure

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends screening for high blood pressure in adults aged 18 and older. *Grade: A Recommendation.*

Clinical Considerations

- This recommendation applies to adults without known hypertension.
- Office measurement of blood pressure is most commonly done with a sphygmomanometer. High blood pressure (hypertension) is usually defined in adults as a systolic blood pressure of 140 mmHg or higher, or a diastolic blood pressure of 90 mmHg or higher. Because of the variability in individual blood pressure measurements, it is recommended that hypertension be diagnosed only after 2 or more elevated readings are obtained on at least 2 visits over a period of 1 to several weeks.
- The relationship between systolic blood pressure and diastolic blood pressure and cardiovascular risk is continuous and graded. The actual level of blood pressure elevation should not be the sole factor in determining treatment. Clinicians should consider the patient's overall cardiovascular risk profile, including smoking, diabetes, abnormal blood lipid values, age, sex, sedentary lifestyle, and obesity, when making treatment decisions.

- Evidence is lacking to recommend an optimal interval for screening adults for hypertension. The seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) recommends screening every 2 years in persons with blood pressure less than 120/80 mmHg and every year with systolic blood pressure of 120 to 139 mmHg or diastolic blood pressure of 80 to 90 mmHg.
- Various pharmacological agents are available to treat high blood pressure. The JNC 7 guidelines for treatment of high blood pressure can be accessed at http://www.nhlbi.nih.gov/guidelines/hypertension/jncintro.htm.
- Nonpharmacological therapies, such as reduction of dietary sodium intake, potassium supplementation, increased physical activity, weight loss, stress management, and reduction of alcohol intake, are associated with a reduction in blood pressure. For those who consume large amounts of alcohol (>20 drinks per week), studies have shown that reduced drinking decreases blood pressure.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2007; 147:787-791.

Screening for Lipid Disorders in Adults

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) strongly recommends screening men aged 35 and older for lipid disorders. *Grade: A Recommendation.*

The USPSTF recommends screening men aged 20 to 35 for lipid disorders if they are at increased risk for coronary heart disease. *Grade: B Recommendation.*

The USPSTF strongly recommends screening women aged 45 and older for lipid disorders if they are at increased risk for coronary heart disease. *Grade: A Recommendation.*

The USPSTF recommends screening women aged 20 to 45 for lipid disorders if they are at increased risk for coronary heart disease. *Grade: B Recommendation.*

The USPSTF makes no recommendation for or against routine screening for lipid disorders in men aged 20 to 35, or in women aged 20 and older who are not at increased risk for coronary heart disease. *Grade: C Recommendation.*

Clinical Considerations

- Lipid disorders, also called dyslipidemias, are abnormalities of lipoprotein metabolism and include elevations of total cholesterol, LDL-C, or triglycerides (TG), or deficiencies of HDL-C. These

disorders can be acquired or familial (e.g., familial hypercholesterolemia). This recommendation applies to adults aged 20 and older who have not previously been diagnosed with dyslipidemia.

- Increased risk, for the purposes of this recommendation, is defined by the presence of any one of the risk factors listed below. The greatest risk for CHD is conferred by a combination of multiple listed factors. While the USPSTF did not use a specific numerical risk to bound this recommendation, the framework used by the USPSTF in making these recommendations relies on a 10-year risk of cardiovascular events:
  - Diabetes.
  - Previous personal history of CHD or non-coronary atherosclerosis (e.g., abdominal aortic aneurysm, peripheral artery disease, carotid artery stenosis).
  - A family history of cardiovascular disease before age 50 in male relatives or age 60 in female relatives.
  - Tobacco use.
  - Hypertension.
  - Obesity (BMI ≥30).
- The preferred screening tests for dyslipidemia are total cholesterol and HDL-C on non-fasting or fasting samples. There is currently insufficient evidence of the benefit of including TG as a part of

the initial tests used to screen routinely for dyslipidemia. Abnormal screening test results should be confirmed by a repeated sample on a separate occasion, and the average of both results should be used for risk assessment.

- Measuring total cholesterol alone is acceptable for screening if available laboratory services cannot provide reliable measurements of HDL-C; measuring both total cholesterol and HDL-C is more sensitive and specific for assessing coronary heart disease risk than measuring total cholesterol alone. In conjunction with HDL-C, the addition of either LDL-C or total cholesterol would provide comparable information, but measuring LDL-C requires a fasting sample and is more expensive. Direct LDL-C testing, which does not require a fasting sample measurement, is now available; however, calculated LDL (total cholesterol minus HDL minus TG/5) is the validated measurement used in trials for risk assessment and treatment decisions. In patients with dyslipidemia identified by screening, complete lipoprotein analysis is useful.
- The optimal interval for screening is uncertain. On the basis of other guidelines and expert opinion, reasonable options include every 5 years, shorter intervals for people who have lipid levels close to those warranting therapy, and longer intervals for those not at increased risk who have had repeatedly normal lipid levels.
- An age to stop screening has not been established. Screening may be appropriate in older people who

have never been screened; repeated screening is less important in older people because lipid levels are less likely to increase after age 65. However, because older adults have an increased baseline risk for coronary heart disease, they stand to gain greater absolute benefit from the treatment of dyslipidemia, compared with younger adults.

- Treatment decisions should take into account a person's overall risk of heart disease rather than lipid levels alone. Overall risk assessment should include the presence and severity of the following risk factors: age, gender, diabetes, elevated blood pressure, family history (in younger adults), and smoking. Risk calculators that incorporate specific information on multiple risk factors provide a more accurate estimation of cardiovascular risk than tools that simply count numbers of risk factors.
- Drug therapy is usually more effective than diet alone in improving lipid profiles, but choice of treatment should consider overall risk, costs of treatment, and patient preferences. Guidelines for treating lipid disorders are available from the National Cholesterol Education Program of the National Institutes of Health (http://www.nhlbi.nih.gov/about/ncep/).
- Although lifestyle modifications (diet and physical activity) are appropriate initial therapies for most patients, a minority achieves substantial reductions in lipid levels from changes in diet alone; drugs are frequently needed to achieve therapeutic goals, especially for those at increased risk for coronary

heart disease. Lipid-lowering treatments should be accompanied by interventions addressing all modifiable risk factors for heart disease, including smoking cessation, treatment of blood pressure, diabetes, and obesity, as well as promotion of a healthy diet and regular physical activity. Long-term adherence to therapies should be emphasized.

This USPSTF recommendation was first published by: Agency for Healthcare Research and Quality, Rockville, MD. June 2008. http://www.USPreventiveServicesTaskForce.org.

Screening for Peripheral Arterial Disease

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends against routine screening for peripheral arterial disease (PAD). *Grade: D Recommendation.*

Clinical Considerations

- The ankle brachial index, a ratio of Doppler-recorded systolic pressures in the lower and upper extremities, is a simple and accurate noninvasive test for the screening and diagnosis of PAD. The ankle brachial index has demonstrated better accuracy than other methods of screening, including history-taking, questionnaires, and palpation of peripheral pulses. An ankle-brachial index value of less than 0.90 (95% sensitive and specific for angiographic PAD) is strongly associated with limitations in lower extremity functioning and physical activity tolerance.
- Smoking cessation and lipid-lowering agents improve claudication symptoms and lower extremity functioning among patients with symptomatic PAD. Smoking cessation and physical activity training also increase maximal walking distance among men with early PAD. Counseling for smoking cessation, however, should be offered to all patients who smoke, regardless of the presence of PAD. Similarly,

physically inactive patients should be counseled to increase their physical activity, regardless of the presence of PAD.

This USPSTF recommendation was first published by: Agency for Healthcare Research and Quality, Rockville, MD. August 2005. http://www.USPreventiveServicesTask Force.org.

Screening for Asymptomatic Bacteriuria

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends screening for asymptomatic bacteriuria with urine culture for pregnant women at 12 to 16 weeks' gestation or at the first prenatal visit, if later. *Grade: A Recommendation.*

The USPSTF recommends against screening for asymptomatic bacteriuria in men and nonpregnant women. *Grade: D Recommendation.*

Clinical Considerations

- This recommendation applies to the general adult population, including adults with diabetes. The USPSTF did not review evidence for screening certain groups at high risk for severe urinary tract infections, such as transplant recipients, patients with sickle cell disease, and patients with recurrent urinary tract infections.
- The screening tests used commonly in the primary care setting (dipstick analysis and direct microscopy) have poor positive and negative predictive value for detecting bacteriuria in

asymptomatic persons. Urine culture is the gold standard for detecting asymptomatic bacteriuria but is expensive for routine screening in populations with a low prevalence of the condition. However, no currently available tests have a high enough sensitivity and negative predictive value in pregnant women to replace the urine culture as the preferred screening test.

- Pregnant women with asymptomatic bacteriuria should receive antibiotic therapy directed at the cultured organism and follow-up monitoring.
- All pregnant women should provide a clean-catch urine specimen for a screening culture at 12 to 16 weeks' gestation or at the first prenatal visit, if later. The optimal frequency of subsequent urine testing during pregnancy is uncertain.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2008; 149:43-47.

Screening for Chlamydial Infection

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends screening for chlamydial infection for all sexually active non-pregnant young women aged 24 and younger and for older non-pregnant women who are at increased risk. *Grade: A Recommendation.*

The USPSTF recommends screening for chlamydial infection for all pregnant women aged 24 and younger and for older pregnant women who are at increased risk. *Grade: B Recommendation.*

The USPSTF recommends against routinely providing screening for chlamydial infection for women aged 25 and older, whether or not they are pregnant, if they are not at increased risk. *Grade: C Recommendation.*

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for chlamydial infection for men. *Grade: I Statement.*

Clinical Considerations

- These recommendations target all sexually active individuals, including adolescents and pregnant women.

- All sexually active women 24 years of age or younger, including adolescents, are at increased risk for chlamydial infection. In addition to sexual activity and age, other risk factors for chlamydial infection include a history of chlamydial or other sexually transmitted infection, new or multiple sexual partners, inconsistent condom use, and exchanging sex for money or drugs. Risk factors for pregnant women are the same as for nonpregnant women.
- Prevalence of chlamydial infection varies widely among patient populations. African-American and Hispanic women have a higher prevalence of infection than the general population in many communities and settings. Among men and women, increased prevalence rates are also found in incarcerated populations, military recruits, and patients at public sexually transmitted infection clinics.
- Nucleic acid amplification tests have high specificity and sensitivity when used as screening tests for chlamydial infection. Nucleic acid amplification tests can be used with urine and vaginal swabs, enabling screening when a pelvic examination is not performed.
- Appropriate treatment of chlamydial infection has been outlined by the Centers for Disease Control and Prevention (CDC). In its 2006 sexually

transmitted disease treatment guidelines, the CDC recommends that chlamydia infection be treated with 1 g of azithromycin in a single oral dose or with oral doxycycline, 100 mg twice daily for 7 days. Pregnant women with chlamydial infection may be treated with 1 g of azithromycin in a single oral dose or amoxicillin, 500 mg orally 3 times daily for 7 days.[1] Because the CDC updates these recommendations regularly, clinicians are encouraged to access the CDC Web site (http://www.cdc.gov/std/treatment/) to obtain the most up-to-date information.

- To prevent recurrent transmission, clinicians should ensure that all sexual partners of infected individuals are tested and treated if infected, or treated presumptively.
- Screening for pregnant women who are at increased risk for chlamydial infection is recommended at the first prenatal visit. For pregnant women who remain at increased risk and for those who acquire a new risk factor, such as a new sexual partner, a screening should be conducted during the third trimester. The optimal interval for screening nonpregnant women is unknown. The CDC recommends at least annual screening for women at increased risk.
- The USPSTF concluded that the evidence is insufficient to determine the balance of benefits and harms related to screening men for chlamydial infection. Specifically, the USPSTF did not find evidence that screening programs that target men

result in a decreased incidence of infection in women.

The USPSTF notes that programs that screen men as a means of reducing transmission to women are not common practice, that primary care clinicians can institute screening in men, that the costs of additional screening tests per individual are relatively low, and that the potential harms of screening are small.

The USPSTF recognizes that asymptomatic, untreated infections in men provide a reservoir of infection that may make it difficult to improve health outcomes in women through screening programs that target only women. However, given the low national rates of screening in women at risk, the USPSTF believes that clinicians and health care systems should focus on improving the screening rates among women at increased risk, a group in which the benefits of screening are certain.

- Primary care clinicians and the health care systems in which they work are responsible for ensuring that asymptomatic women at risk for chlamydial infection are screened. In some communities, this may involve home- or school-based screening programs.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2007; 147:128-33.

Screening for Genital Herpes

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends against routine serological screening for herpes simplex virus (HSV) in asymptomatic pregnant women at any time during pregnancy to prevent neonatal HSV infection. *Grade: D Recommendation.*

The USPSTF recommends against routine serological screening for HSV in asymptomatic adolescents and adults. *Grade: D Recommendation.*

Clinical Considerations

- Serological screening tests for genital herpes can detect prior infection with HSV in asymptomatic persons, and new type-specific serological tests can differentiate between HSV-1 and HSV-2 exposure (these tests cannot differentiate between oral vs. genital herpes exposure); however, given the natural history of genital herpes, there is limited evidence to guide clinical intervention in those asymptomatic persons who have positive serological test results. False-positive test results may lead to labeling and psychological stress without any potential benefit to patients. Negative test results (both false-negative and true-negative results) may provide false reassurance to continue high-risk sexual behaviors.
- There is new, good-quality evidence demonstrating that systemic antiviral therapy effectively reduces viral shedding and recurrences of genital herpes in

adolescents and adults with a history of recurrent genital herpes. There are multiple efficacious regimens that may be used to prevent the recurrence of clinical genital herpes.

- The USPSTF did not examine the evidence for the effectiveness of counseling to avoid high-risk sexual behavior in persons with a history of genital herpes to prevent transmission to discordant partners, or for the primary prevention of genital herpes in persons not infected with HSV. There are known health benefits of avoiding high-risk sexual behavior, including prevention of sexually transmitted infections (STIs) and HIV infection.
- Primary HSV infection during pregnancy presents the greatest risk for transmitting infection to the newborn. The fact that women with primary HSV infection are initially seronegative limits the usefulness of screening with antibody tests. The USPSTF did not find any studies testing the use of antibody screening to find and treat seronegative pregnant women (i.e., those at risk for primary HSV infection) prophylactically. However, the number of seronegative pregnant women one would need to treat to theoretically avoid one primary infection would be very high, making the potential benefit small. At the same time, the potential harm to many low-risk women and fetuses from the side effects of antiviral therapy may be great.

- There is fair evidence that antiviral therapy in late pregnancy can reduce HSV recurrence and viral shedding at delivery in women with recurrent HSV infection; however, there is currently no evidence that antiviral use in women with a history of HSV leads to reduced neonatal infection. Likewise, there is limited information on the benefits of screening women in labor for signs of active genital HSV lesions, and for the performance of cesarean delivery on those with lesions.

This USPSTF recommendation was first published by: Agency for Healthcare Research and Quality. Rockville, MD. March 2005. http://www.USPreventiveServicesTaskForce.org.

Screening for Gonorrhea

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends that clinicians screen all sexually active women, including those who are pregnant, for gonorrhea infection if they are at increased risk for infection (that is, if they are young or have other individual or population risk factors; see Clinical Considerations for further discussion of risk factors). *Grade: B Recommendation.*

The USPSTF found insufficient evidence to recommend for or against routine screening for gonorrhea infection in men at increased risk for infection (see Clinical Considerations for discussion of risk factors). *Grade: I Statement.*

The USPSTF recommends against routine screening for gonorrhea infection in men and women who are at low risk for infection (see Clinical Considerations for discussion of risk factors). *Grade: D Recommendation.*

The USPSTF found insufficient evidence to recommend for or against routine screening for gonorrhea infection in pregnant women who are not at increased risk for infection (see Clinical Considerations for discussion of risk factors). *Grade: I Statement.*

The USPSTF strongly recommends prophylactic ocular topical medication for all newborns against gonococcal ophthalmia neonatorum. *Grade: A Recommendation.*

Clinical Considerations

- Women and men under the age of 25—including sexually active adolescents—are at highest risk for genital gonorrhea infection. Risk factors for gonorrhea include a history of previous gonorrhea infection, other sexually transmitted infections, new or multiple sexual partners, inconsistent condom use, sex work, and drug use. Risk factors for pregnant women are the same as for non-pregnant women. Prevalence of gonorrhea infection varies widely among communities and patient populations. African Americans and men who have sex with men have a higher prevalence of infection than the general population in many communities and settings.
- Individual risk depends on the local epidemiology of disease. Local public health authorities provide guidance to clinicians to help identify populations who are at increased risk in their communities. In communities with a high prevalence of gonorrhea, broader screening of sexually active young people may be warranted, especially in settings serving individuals who are at increased risk. Additionally, clinicians may want to consider other population-based risk factors, including residence in urban communities and communities with high rates of poverty, when making screening decisions. Low community prevalence of gonorrhea infection may justify more targeted screening.

- Screening is recommended at the first prenatal visit for pregnant women who are in a high risk group for gonorrhea infection. For pregnant patients who are at continued risk, and for those who acquire a new risk factor, a second screening should be conducted during the third trimester. The optimal interval for screening in the non-pregnant population is not known.
- Vaginal culture remains an accurate screening test when transport conditions are suitable. Newer screening tests, including nucleic acid amplification tests and nucleic acid hybridization tests, have demonstrated improved sensitivity and comparable specificity when compared with cervical culture. Some newer tests can be used with urine and vaginal swabs, which enables screening when a pelvic examination is not performed.
- Appropriate treatment of gonorrhea infection and administration of prophylactic medication to newborns have been outlined by the Centers for Disease Control and Prevention (CDC) (http://www.cdc.gov/std/treatment/42002TG.htm#Gonococcal). Genital infection in men and women may be treated with a third generation cephalosporin or fluoroquinolone, and pregnant women may be treated with third generation cephalosporins. Because of emerging fluoroquinolone resistance, the CDC issued new treatment guidelines in 2004 recommending that

men who have sex with men and those who acquired an infection in California, Hawaii, or Asia not be treated with fluoroquinolone antibiotics. If clinicians have not concurrently screened for chlamydial infection, the CDC recommends presumptive treatment for chlamydia at the time of treatment for gonorrhea. In order to prevent recurrent transmission, partners of infected individuals should be tested and treated if infected, or treated presumptively.

- Gonorrhea is a nationally reportable condition. More complete reporting of gonorrhea cases to public health authorities will permit more accurate estimations of gonorrhea prevalence. Improved information will allow clinicians to screen for gonorrhea in ways that improve the balance between benefits and harms for their patients.
- Research priorities for gonorrhea screening include greater understanding of the benefits of screening men at increased risk, especially men who have sex with men, and the role of reporting on gonorrhea rates and testing priorities.

This USPSTF recommendation was first published in: *Ann Fam Med.* 2005; 3:263-267.

Screening for Hepatitis B Virus Infection

NOTE: Please see the updated Screening for Hepatitis B Virus Infection in Pregnancy on p. 108.

Summary of Recommendations

The USPSTF recommends against routinely screening the general asymptomatic population for chronic hepatitis B virus infection. *Grade: D Recommendation.*

Clinical Considerations

- Routine hepatitis vaccination has had significant impact in reducing the number of new HBV infections per year, with the greatest decline among children and adolescents. Programs that vaccinate health care workers also reduce the transmission of HBV infection.
- Most people who become infected as adults or older children recover fully from HBV infection and develop protective immunity to the virus.
- The main risk factors for HBV infection in the United States include diagnosis with a sexually transmitted disease, intravenous drug use, sexual contact with multiple partners, male homosexual activity, and household contacts of chronically infected persons. However, screening strategies to identify individuals at high risk have poor predictive value, since 30% to 40% of infected individuals do not have any easily identifiable risk factors.

- Important predictors of progressive HBV infection include longer duration of infection and the presence of comorbid conditions such as alcohol abuse, HIV, or other chronic liver disease. Individuals with HBV infection identified through screening may benefit from interventions designed to reduce liver injury from other causes, such as counseling to avoid alcohol abuse and immunization against hepatitis A. However, there is limited evidence on the effectiveness of these interventions.

This USPSTF recommendation was first published by: Agency for Healthcare Research and Quality, Rockville, MD. February 2004. http://www.USPreventiveServicesTask Force.org.

Screening for Hepatitis B Virus Infection in Pregnancy

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends screening for hepatitis B virus (HBV) infection in pregnant women at their first prenatal visit. *Grade: A Recommendation.*

Clinical Considerations

- This recommendation statement applies to all pregnant women.
- Screening for HBV infection by testing for HBsAg should be performed in each pregnancy, regardless of previous hepatitis B vaccination or previous negative HBsAg test results.
- A test for HBsAg should be ordered at the first prenatal visit with other recommended screening tests. At the time of admission to a hospital, birth center, or other delivery setting, women with unknown HBsAg status or with new or continuing risk factors for HBV infection (such as injection drug use or evaluation or treatment for a sexually transmitted disease) should receive screening.
- Infants born to HBV-infected mothers should receive hepatitis B vaccine and hepatitis B immune globulin within 12 hours of birth. Infants born to mothers with unknown HBsAg status should receive hepatitis B vaccine within 12 hours of birth, followed by hepatitis B immune globulin as soon as

possible (but not later than 7 days after birth) if the mother tests positive for HBsAg.

Pregnant women who test positive for HBsAg should be referred to an appropriate case-management program and should be provided with or referred for counseling and medical management of HBV infection. Counseling should include information about prevention of HBV transmission to sexual partners and household contacts and reassurance regarding the safety of breastfeeding in infants who receive appropriate prophylaxis.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2009; 150:869-873.

Screening for Hepatitis C in Adults

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends against routine screening for hepatitis C virus (HCV) infection in asymptomatic adults who are not at increased risk (general population) for infection. *Grade: D Recommendation.*

The USPSTF found insufficient evidence to recommend for or against routine screening for HCV infection in adults at high risk for infection. *Grade: I Statement.*

Clinical Considerations

- Established risk factors for HCV infection include current or past intravenous drug use, transfusion before 1990, dialysis, and being a child of an HCV-infected mother. Surrogate markers, such as high-risk sexual behavior (particularly sex with someone infected with HCV) and the use of illegal drugs, such as cocaine or marijuana, have also been associated with increased risk for HCV infection. The proportion of people who received blood or blood product transfusions before 1990 will continue to decline, and HCV infection will be associated mainly with intravenous drug use and, to some extent, unsafe sexual behaviors.

- Initial testing for HCV infection is typically done by enzyme immunoassay (EIA). In a population with a low prevalence of HCV infection (e.g., 2%), approximately 59% of all positive tests using the third-generation EIA test with 97% specificity would be false positive. As a result, confirmatory testing is recommended with the strip recombinant immunoblot assay (third-generation RIBA).
- Important predictors of progressive HCV infection include older age at acquisition; longer duration of infection; and presence of comorbid conditions, such as alcohol misuse, HIV infection, or other chronic liver disease. Asymptomatic individuals with HCV infection identified through screening may benefit from interventions designed to reduce liver injury from other causes, such as counseling to avoid alcohol misuse and immunization against hepatitis A and hepatitis B. However, there is limited evidence of the effectiveness of these interventions.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2004; 140(6):462-464.

Screening for HIV

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) strongly recommends that clinicians screen for human immunodeficiency virus (HIV) all adolescents and adults at increased risk for HIV infection. *Grade: A Recommendation.*

The USPSTF makes no recommendation for or against routinely screening for HIV adolescents and adults who are not at increased risk for HIV infection. *Grade: C Recommendation*.

The USPSTF recommends that clinicians screen all pregnant women for HIV. *Grade: A Recommendation.*

Clinical Considerations

- A person is considered at increased risk for HIV infection (and thus should be offered HIV testing) if he or she reports 1 or more individual risk factors or receives health care in a high-prevalence or high-risk clinical setting.
- Individual risk for HIV infection is assessed through a careful patient history. Those at increased risk (as determined by prevalence rates) include: men who have had sex with men after 1975; men and women having unprotected sex with multiple partners; past or present injection drug users; men and women who exchange sex for money or drugs or have sex partners who do; individuals whose past or present sex partners were HIV-infected, bisexual, or

injection drug users; persons being treated for sexually transmitted diseases (STDs); and persons with a history of blood transfusion between 1978 and 1985. Persons who request an HIV test despite reporting no individual risk factors may also be considered at increased risk, since this group is likely to include individuals not willing to disclose high risk behaviors.

- There is good evidence of increased yield from routine HIV screening of persons who report no individual risk factors but are seen in high-risk or high-prevalence clinical settings. High-risk settings include STD clinics, correctional facilities, homeless shelters, tuberculosis clinics, clinics serving men who have sex with men, and adolescent health clinics with a high prevalence of STDs. High-prevalence settings are defined by the Centers for Disease Control and Prevention (CDC) as those known to have a 1% or greater prevalence of infection among the patient population being served. Where possible, clinicians should consider the prevalence of HIV infection or the risk characteristics of the population they serve in determining an appropriate screening strategy. Data are currently lacking to guide clinical decisions about the optimal frequency of HIV screening.
- Current evidence supports the benefit of identifying and treating asymptomatic individuals in immunologically advanced stages of HIV disease (CD4 cell counts < 200 cells/mm^3) with highly active antiretroviral therapy (HAART). Appropriate

prophylaxis and immunization against certain opportunistic infections have also been shown to be effective interventions for these individuals. Use of HAART can be considered for asymptomatic individuals who are in an earlier stage of disease but at high risk for disease progression (CD4 cell count < 350 cells/mm^3 or viral load > 100,000 copies/mL), although definitive evidence of a significant benefit of starting HAART at these counts is currently lacking.

- The standard test for diagnosing HIV infection, the repeatedly reactive enzyme immunoassay followed by confirmatory western blot or immunofluorescent assay, is highly accurate (sensitivity and specificity > 99%). Rapid HIV antibody testing is also highly accurate; can be performed in 10 to 30 minutes; and, when offered at the point of care, is useful for screening high risk patients who do not receive regular medical care (e.g., those seen in emergency departments), as well as women with unknown HIV status who present in active labor.
- Early identification of maternal HIV seropositivity allows early antiretroviral treatment to prevent mother-to-child transmission, allows providers to avoid obstetric practices that may increase the risk for transmission, and allows an opportunity to counsel the mother against breastfeeding (also known to increase the risk for transmission). There is evidence that the adoption of "opt-out" strategies to screen pregnant women (who are informed that an HIV test will be conducted as a standard part of

prenatal care unless they decline it) has resulted in higher testing rates. However, ethical and legal concerns of not obtaining specific informed consent for an HIV test using the "opt-out" strategy have been raised. While dramatic reductions in HIV transmission to neonates have been noted as a result of early prenatal detection and treatment, the extent to which detection of HIV infection and intervention during pregnancy may improve long-term maternal outcomes is unclear.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2005; 143:32-37.

Behavioral Counseling to Prevent Sexually Transmitted Infections

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends high-intensity behavioral counseling to prevent sexually transmitted infections (STIs) for all sexually active adolescents and for adults and increased risk for STIs. *Grade: B Recommendation.*

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of behavioral counseling to prevent STIs in non-sexually-active adolescents and in adults not at increased risk for STIs. *Grade: I Statement.*

Clinical Considerations

- This recommendation applies to all sexually active adolescents and adults.
- All sexually active adolescents are at increased risk for STIs and should be offered counseling. Adults with current STIs or infections within the past year are at increased risk for future STIs. In addition, adults who have multiple current sexual partners should be considered at increased risk and offered

counseling to prevent STIs. Married adolescents may be considered for counseling if they meet the criteria described for adults. Clinicians should also consider the communities they serve. If the practice's population has a high rate of STIs, all sexually active patients in nonmonogamous relationships may be considered to be at increased risk.

- Among the studies reviewed, successful high-intensity interventions were delivered through multiple sessions, most often in groups, with total durations from 3 to 9 hours. Little evidence suggests that single-session interventions or interventions lasting less than 30 minutes were effective in reducing STIs. Although 2 studies of moderate-intensity interventions did not demonstrate effect, a third study demonstrated that two 20-minute counseling sessions before and after HIV testing resulted in a clinically and statistically significant reduction in STIs. The USPSTF found no studies of abstinence-only counseling programs delivered in the clinical setting.
- Because of the lower incidence of STIs among adults who are not at increased risk, the potential net benefit of behavioral counseling is likely to be smaller for this population than for those at increased risk. Given the current lack of evidence of effectiveness; the substantial costs in time and money for clinicians, patients, and the health

system; and the potential missed opportunity for the provision of higher-priority, evidence-based preventive services, primary care clinicians should consider not routinely offering behavioral counseling to prevent STIs to adults who are not at increased risk for infection. The USPSTF found limited evidence on the counseling of non-sexually-active adolescents, with no effect or harms from brief counseling in 1 small study. Although clinicians may not be able to identify all adolescents who are sexually active, intensive counseling for all adolescents to reach those who are not appropriately identified as at risk is not supported by current evidence and would require significant resources. The effectiveness of less intensive counseling has not been established and the benefits of intensive counseling for adolescents who are identified as at risk may not be generalizable to those who deny sexual activity.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2008; 149(7):491-497.

Screening for Syphilis Infection

NOTE: An update to this recommendation is in progress. Please visit the USPSTF Web site at http://www.USPreventiveServicesTaskForce.org or the Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov for the most current recommendation. Please see the updated Screening for Syphilis Infection in Pregnancy on p. 122.

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) strongly recommends that clinicians screen persons at increased risk for syphilis infection. *Grade: A Recommendation.*

The USPSTF recommends against routine screening of asymptomatic persons who are not at increased risk for syphilis infection. *Grade: D Recommendation.*

Clinical Considerations

- Populations at increased risk for syphilis infection (as determined by incident rates) include men who have sex with men and engage in high-risk sexual behavior, commercial sex workers, persons who exchange sex for drugs, and those in adult correctional facilities. There is no evidence to support an optimal screening frequency in this population. Clinicians should consider the characteristics of the communities they serve in

determining appropriate screening strategies. Prevalence of syphilis infection varies widely among communities and patient populations. For example, the prevalence of syphilis infection differs by region (the prevalence of infection is higher in the southern U.S. and in some metropolitan areas than it is in the U.S. as a whole) and by ethnicity (the prevalence of syphilis infection is higher in Hispanic and African American populations than it is in the white population).

- Persons diagnosed with other sexually transmitted diseases (STDs) (i.e., chlamydia, gonorrhea, genital herpes simplex, human papilloma virus, and HIV) may be more likely than others to engage in high-risk behavior, placing them at increased risk for syphilis; however, there is no evidence that supports the routine screening of individuals diagnosed with other STDs for syphilis infection. Clinicians should use clinical judgment to individualize screening for syphilis infection based on local prevalence and other risk factors (see above).
- Nontreponemal tests commonly used for initial screening are the Venereal Disease Research Laboratory (VDRL) or Rapid Plasma Reagin (RPR), followed by a confirmatory fluorescent

treponemal antibody absorbed (FTA-ABS) or T. pallidum particle agglutination (TP-PA). The optimal screening interval in average- and high-risk persons has not been determined.

This USPSTF recommendation was first published in: *Ann Fam Med.* 2004; 2(4):362-365.

Screening for Syphilis Infection in Pregnancy

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends that clinicians screen all pregnant women for syphilis infection. *Grade: A Recommendation*.

Clinical Considerations

- This recommendation applies to pregnant women.
- Pregnant women who are at increased risk for syphilis infection include uninsured women, women living in poverty, sex workers, illicit drug users, and women in communities with high syphilis morbidity. The prevalence of syphilis infection differs by region (it is higher in the southern United States and in some metropolitan areas than it is in the United States as a whole) and by ethnicity (it is higher in Hispanic and African-American populations than in the white population). Persons in whom sexually transmitted diseases have been diagnosed may be more likely than others to engage in high-risk behavior, which places them at increased risk for syphilis.
- Nontreponemal tests commonly used for initial screening are the Venereal Disease Research Laboratory (VDRL) test or the Rapid Plasma Reagin (RPR) test. These are typically followed by a confirmatory fluorescent treponemal antibody

absorbed test or Treponema pallidum particle agglutination test (TPPA).

- The Centers for Disease Control and Prevention (CDC) has outlined appropriate treatment of syphilis in pregnancy (http://www.cdc.gov/std/treatment/). In its 2006 sexually transmitted disease treatment guidelines, the CDC recommends parenteral benzathine penicillin G for the treatment of syphilis in pregnancy. Evidence on the efficacy or safety of alternative antibiotics in pregnancy is limited; therefore, women who report penicillin allergies should be evaluated for penicillin allergies and, if present, desensitized and treated with penicillin. Because the CDC updates these recommendations regularly, clinicians are encouraged to access the CDC Web site (http://www.cdc.gov/std/treatment/) to obtain the most up-to-date information.
- All pregnant women should be tested at their first prenatal visit. For women in high-risk groups, many organizations recommend repeat serologic testing in the third trimester and at delivery. Most states mandate that all pregnant women be screened at some point during pregnancy, and many mandate screening at the time of delivery. Follow-up serologic tests should be obtained after treatment to document decline in titers. To ensure that results are comparable, follow-up tests should be performed by using the same nontreponemal test that was used initially to document the infection (for example, VDRL or RPR).

- The USPSTF has made recommendations on screening for other sexually transmitted diseases in pregnancy, including gonorrhea, chlamydial infection, hepatitis B, herpes, and HIV. Please go to the USPSTF Web site (http://www.USPreventiveServicesTaskForce.org) for more information on these recommendations. The CDC guidelines on treatment for syphilis in pregnancy can be accessed at http://www.cdc.gov/std/treatment/.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2009; 150:705-709.

Screening for Family and Intimate Partner Violence

NOTE: An update to this recommendation is in progress. Please visit the USPSTF Web site at http://www.USPreventiveServicesTaskForce.org or the Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov for the most current recommendation.

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) found insufficient evidence to recommend for or against routine screening of parents or guardians for the physical abuse or neglect of children, of women for intimate partner violence, or of older adults or their caregivers for elder abuse. *Grade: I Statement.*

Clinical Considerations

- The USPSTF did not review the evidence for the effectiveness of case-finding tools; however, all clinicians examining children and adults should be alert to physical and behavioral signs and symptoms associated with abuse or neglect. Patients in whom abuse is suspected should receive proper documentation of the incident and physical

findings (e.g., photographs, body maps); treatment for physical injuries; arrangements for skilled counseling by a mental health professional; and the telephone numbers of local crisis centers, shelters, and protective service agencies.

- Victims of family violence are primarily children, female spouses/intimate partners, and older adults. Numerous risk factors for family violence have been identified, although some may be confounded by socioeconomic factors. Factors associated with child abuse or neglect include low income status, low maternal education, non-white race, large family size, young maternal age, single-parent household, parental psychiatric disturbances, and presence of a stepfather. Factors associated with intimate partner violence include young age, low income status, pregnancy, mental health problems, alcohol or substance use by victims or perpetrators, separated or divorced status, and history of childhood sexual and/or physical abuse. Factors associated with the abuse of older adults include increasing age, non-white race, low income status, functional impairment, cognitive disability, substance use, poor emotional state, low self-esteem, cohabitation, and lack of social support.
- Several instruments to screen parents for child abuse have been studied, but their ability to predict child abuse or neglect is limited. Instruments to screen for intimate partner violence have also been developed, and although some have demonstrated

good internal consistency (e.g., the HITS [Hurt, Insulted, Threatened, Screamed at] instrument, the Partner Abuse Interview, and the Women's Experience with Battering [WEB] Scale), none have been validated against measurable outcomes. Only a few screening instruments (the Caregiver Abuse Screen [CASE] and the Hwalek-Sengstock Elder Abuse Screening Test [HSEAST]) have been developed to identify potential older victims of abuse or their abusive caretakers. Both of these tools correlated well with previously validated instruments when administered in the community, but have not been tested in the primary care clinical setting.

- Home visit programs directed at high-risk mothers (identified on the basis of sociodemographic risk factors) have improved developmental outcomes and decreased the incidence of child abuse and neglect, as well as decreased rates of maternal criminal activity and drug use.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2004; 140(5):382-386.

Counseling About Proper Use of Motor Vehicle Occupant Restraints and Avoidance of Alcohol Use While Driving

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) concludes that the current evidence is insufficient to assess the incremental benefit, beyond the efficacy of legislation and community-based interventions, of counseling in the primary care setting, in improving rates of proper use of motor vehicle occupant restraints (child safety seats, booster seats, and lap-and-shoulder belts). *Grade: I Statement.*

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of routine counseling of all patients in the primary care setting to reduce driving while under the influence of alcohol or riding with drivers who are alcohol-impaired. *Grade: I Statement.*

Clinical Considerations

- This recommendation refers to behavioral counseling interventions performed in the primary care setting, addressing parents of all infants and children, children, adolescents, and adults.
- The injury prevention benefits of child safety seat and booster seat use require proper use. (That is, the seats should be age- and weight-appropriate and

should be installed and placed into the vehicle correctly.) Infants younger than 1 year of age and weighing fewer than 20 pounds should be placed in rear-facing, infant-only car safety seats or convertible seats positioned in the back seat. Infants younger than 1 year of age and weighing between 20 and 35 pounds should be placed in rear-facing convertible seats positioned in the back seat. Rear-facing child safety seats must not be placed in the front passenger seat of any vehicle that is equipped with an airbag on the front passenger side. Death or serious injury can result from the impact of the airbag against the child safety seat. Toddlers 1 to 4 years of age weighing 20 to 40 pounds should be restrained in a forward-facing convertible seat or forward-facing-only seat positioned in the back seat. Young children 4 to 8 years of age and up to 4'9" (57 inches) in height should be placed in a booster seat in the back seat. After this age (or height), lap-and-shoulder belt use is appropriate. Children younger than 13 years of age should sit in the back seat with lap-and-shoulder belts.

- Behavioral counseling interventions that include an educational component, as well as a demonstration of use or a distribution component, are more effective than those that include education alone.
- Clinical counseling in conjunction with community-based interventions has been effective in increasing proper use of child safety seats. Over the past decade, legislation and enforcement have

contributed substantially to the increasing trends in child safety seat and seat belt use. A comprehensive strategy that includes community-based interventions, primary care counseling in the primary care setting, legislation, and enforcement is critical to the improvement of proper safety restraint use and decrease in the incidence of MVOI.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2007; 147:187-193.

Mental Health Conditions and Substance Abuse

Screening and Behavioral Counseling Interventions in Primary Care to Reduce Alcohol Misuse

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends screening and behavioral counseling interventions to reduce alcohol misuse (go to Clinical Considerations) by adults, including pregnant women, in primary care settings. *Grade: B Recommendation.*

The USPSTF concludes that the evidence is insufficient to recommend for or against screening and behavioral counseling interventions to prevent or reduce alcohol misuse by adolescents in primary care settings. *Grade: I Statement.*

Clinical Considerations

- Alcohol misuse includes "risky/hazardous" and "harmful" drinking that places individuals at risk for future problems. "Risky" or "hazardous" drinking has been defined in the United States as more than 7 drinks per week or more than 3 drinks per occasion for women, and more than 14 drinks per week or more than 4 drinks per occasion for

men. "Harmful drinking" describes persons who are currently experiencing physical, social, or psychological harm from alcohol use but do not meet criteria for dependence. Alcohol abuse and dependence are associated with repeated negative physical, psychological, and social effects from alcohol. The USPSTF did not evaluate the effectiveness of interventions for alcohol dependence because the benefits of these interventions are well established and referral or specialty treatment is recommended for those meeting the diagnostic criteria for dependence.

- Light to moderate alcohol consumption in middle-aged or older adults has been associated with some health benefits, such as reduced risk for coronary heart disease. Moderate drinking has been defined as 2 standard drinks (e.g., 12 ounces of beer) or less per day for men and 1 drink or less per day for women and persons older than 65, but recent data suggest comparable benefits from as little as 1 drink 3 to 4 times a week.
- The Alcohol Use Disorders Identification Test (AUDIT) is the most studied screening tool for detecting alcohol-related problems in primary care settings. It is sensitive for detecting alcohol misuse and abuse or dependence and can be used alone or embedded in broader health risk or lifestyle assessments. The 4-item CAGE (feeling the need to Cut down, Annoyed by criticism, Guilty about drinking, and need for an Eye-opener in the morning) is the most popular screening test for

detecting alcohol abuse or dependence in primary care. The TWEAK, a 5-item scale, and the T-ACE are designed to screen pregnant women for alcohol misuse. They detect lower levels of alcohol consumption that may pose risks during pregnancy. Clinicians can choose screening strategies that are appropriate for their clinical population and setting. Screening tools are available at the National Institute on Alcohol Abuse and Alcoholism Web site: http://www.niaaa.nih.gov/.

- Effective interventions to reduce alcohol misuse include an initial counseling session of about 15 minutes, feedback, advice, and goal-setting. Most also include further assistance and follow-up. Multi-contact interventions for patients ranging widely in age (12-75 years) are shown to reduce mean alcohol consumption by 3 to 9 drinks per week, with effects lasting up to 6 to 12 months after the intervention. They can be delivered wholly or in part in the primary care setting, and by one or more members of the health care team, including physician and non-physician practitioners. Resources that help clinicians deliver effective interventions include brief provider training or access to specially trained primary care practitioners or health educators, and the presence of office-level systems supports (prompts, reminders, counseling algorithms, and patient education materials).
- Primary care screening and behavioral counseling interventions for alcohol misuse can be described with reference to the 5-As behavioral counseling

framework: assess alcohol consumption with a brief screening tool followed by clinical assessment as needed; advise patients to reduce alcohol consumption to moderate levels; agree on individual goals for reducing alcohol use or abstinence (if indicated); assist patients with acquiring the motivations, self-help skills, or supports needed for behavior change; and arrange follow-up support and repeated counseling, including referring dependent drinkers for specialty treatment. Common practices that complement this framework include motivational interviewing, the 5 Rs used to treat tobacco use, and assessing readiness to change.

- The optimal interval for screening and intervention is unknown. Patients with past alcohol problems, young adults, and other high-risk groups (e.g., smokers) may benefit most from frequent screening.
- All pregnant women and women contemplating pregnancy should be informed of the harmful effects of alcohol on the fetus. Safe levels of alcohol consumption during pregnancy are not known; therefore, pregnant women are advised to abstain from drinking alcohol. More research into the efficacy of primary care screening and behavioral intervention for alcohol misuse among pregnant women is needed.

- The benefits of behavioral intervention for preventing or reducing alcohol misuse in adolescents are not known. The CRAFFT questionnaire was recently validated for screening adolescents for substance abuse in the primary care setting. The benefits of screening this population will need to be evaluated as more effective interventions become available in the primary care setting.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2004; 140:555-557.

Screening for Depression in Adults

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends screening adults for depression when staff-assisted depression care supports are in place to assure accurate diagnosis, effective treatment, and followup. *Grade: B Recommendation.*

The USPSTF recommends against routinely screening adults for depression when staff-assisted depression care supports are not in place. There may be considerations that support screening for depression in an individual patient. *Grade: C Recommendation.*

Clinical Considerations

- This recommendation statement applies to nonpregnant adults, including older adults. It does not apply to children and adolescents, who are considered a separate population.
- Individuals at increased risk for depression are considered at risk throughout their lifetime. Groups at increased risk include persons with other psychiatric disorders, including substance misuse; persons with a family history of depression; persons with chronic medical diseases; and persons who are unemployed or of lower socioeconomic status. Also, women are at increased risk compared with men. Significant depressive symptoms are associated with

common life events in older adults, including medical illness, cognitive decline, bereavement, and institutional placement in residential or inpatient settings. However, the presence of risk factors alone cannot distinguish depressed patients from nondepressed patients.

- The USPSTF reviewed evidence about the accuracy of screening instruments in identifying depressed adults in 2002. Many formal screening tools are available, including instruments designed specifically for older adults. Asking 2 simple questions about mood and anhedonia ("Over the past 2 weeks, have you felt down, depressed, or hopeless?" and "Over the past 2 weeks, have you felt little interest or pleasure in doing things?") may be as effective as using more formal instruments. There is little evidence to recommend 1 screening method over another; therefore, clinicians may choose the method most consistent with their personal preference, the patient population being served, and the practice setting.

  All positive screening tests should trigger full diagnostic interviews that use standard diagnostic criteria (that is, those from the updated *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*) to determine the presence or absence of specific depressive disorders, such as MDD or dysthymia. The severity of depression and comorbid psychological problems (for example, anxiety, panic attacks, or substance abuse) should be addressed.

- The reviews of evidence on which this recommendation is based cover treatment of adults with antidepressants or psychotherapy and updated evidence on the efficacy of depression treatment in older adults. Treatment may include antidepressants or specific psychotherapeutic approaches (for example, cognitive behavioral therapy or brief psychosocial counseling) alone or in combination. Both are effective in treating adults and older adults.

  In treating patients aged 18 to 29 years, clinicians may want to select a psychotherapeutic approach or medications other than SSRIs because of the increased risk for suicidal behavior associated with the use of SSRIs. Similarly, for adults 65 years or older, clinicians may want to select a psychotherapeutic approach or medications other than SSRIs because of the increased risk for UGI bleeding associated with the use of SSRIs. In addition, the concurrent use of SSRIs with a nonsteroidal anti-inflammatory drug (NSAID) or low-dose aspirin increases the risk for UGI bleeding in adults (aged 40 to 79 years), although the increase in risk is less with aspirin. The risk for UGI bleeding is greater for medications that feature a moderate to high degree of serotonin reuptake inhibition.

- "Staff-assisted depression care supports" refers to clinical staff that assist the primary care clinician by providing some direct depression care, such as care

support or coordination, case management, or mental health treatment.

In the available evidence, the lowest effective level of staff-assisted depression care supports consisted of a screening nurse who advised resident physicians of positive screening results and provided a protocol that facilitated referral to behavioral treatment. At the highest level, staff-assisted depression care supports included screening; institutional monetary commitment; staff and clinician training (1- or 2-day workshops); clinician manuals; monthly training lectures; academic detailing; many materials for clinicians, staff, and patients; an initial visit with a nurse specialist for assessment, education, and discussion of patient preferences and goals; a visit with a trained nurse specialist for follow-up assessment and ongoing support for adherence to medication for those prescribed antidepressant medications; a visit with a trained therapist for cognitive behavioral therapy; and a reduced copay for patients referred for psychotherapy. In a successful study designed for practices without ready access to mental health specialty care, office staff recruited, screened, and enrolled participants who screened positive for depression before a clinic visit. If the physician confirmed the depression diagnosis, the participant was scheduled for a return visit with the physician and to meet with the nurse specialist in 1 week. The nurse specialist reassessed the patient's level of depression, discussed treatment

options and preferences, and asked the participant to complete a homework assignment. Participants completed up to 8 additional sessions that followed the same pattern, either by phone or in person.

Multidisciplinary team-based primary care that includes self-management support and care coordination has been shown to be effective in management of depression. These components of primary care are detailed in recent recommendations from the Task Force on Community Preventive Services. It recommends collaborative care for treatment of adults 18 years or older with major depression on the basis of strong evidence of effectiveness in improving short-term treatment outcomes. As defined, collaborative care and disease management of depressive disorders includes a systematic, multicomponent, team-based approach that "strengthens and supports self-care, while assuring that effective medical, preventive and health maintenance interventions take place" to improve the quality and outcome of patient care for treatment of major depressive disorders.

- The optimum interval for screening for depression is unknown. Recurrent screening may be most productive in patients with a history of depression, unexplained somatic symptoms, comorbid psychological conditions (for example, panic disorder or generalized anxiety), substance abuse, or chronic pain.

- The Task Force on Community Preventive Services also has made several recommendations about depression care in older adults. It recommends clinic-based depression care management to reduce depression in older adults on the basis of sufficient evidence and home-based depression care management on the basis of strong evidence. The Task Force on Community Preventive Services found insufficient evidence to determine the effectiveness of community-based exercise interventions for reducing depression in older adults.

  The Task Force on Community Preventive Services makes recommendations on population-based interventions appropriate for use by communities and health care systems to promote health and to prevent disease, injury, disability, and premature death. More information about the Task Force on Community Preventive Services and its recommendations on depression interventions is available on their Web site (http://www.thecommunityguide.org).

- The USPSTF recently updated its recommendation on screening for depression in children and adolescents. The USPSTF recommends screening adolescents (aged 12 to 18 years) for MDD when systems are in place to assure accurate diagnosis, psychotherapy (cognitive behavioral or interpersonal), and follow-up (Grade B recommendation). In addition, the USPSTF

concluded that the current evidence is insufficient to assess the balance of benefits and harms of screening of children (aged 7 to 11 years) for MDD (I statement).

In 2004, the USPSTF concluded that the evidence is insufficient to recommend for or against routine screening by primary care clinicians to detect suicide risk in the general population (I statement). At that time, the USPSTF found no evidence that screening for suicide risk reduces suicide attempts or mortality. The USPSTF also found limited evidence on the accuracy of screening tools to identify suicide risk in the primary care setting, including tools to identify those at high risk, and found no evidence that directly addressed the harms of screening and treatment of suicide risk. In addition, the USPSTF found insufficient evidence that treatment of those at high risk reduces suicide attempts or mortality.

For the full recommendation statements and evidence reviews, please go to the USPSTF Web site (http://www.USPreventiveServicesTaskForce.org).

This USPSTF recommendation was first published in: *Ann Intern Med.* 2009; 151:784-792.

Screening for Illicit Drug Use

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening adolescents, adults, and pregnant women for illicit drug use. *Grade: I Statement.*

Clinical Considerations

- While the rate of illicit drug use in the U.S. is highest between the ages of 18 to 20 years, more than 10% of adolescents aged 12 to 17 are known to use illicit drugs. The percentage of adults who regularly use illicit drugs decreases steadily with age. About 5% of pregnant women report using illicit drugs within the past month.
- Marijuana is the most commonly used illicit drug in the United State, with about 6% of the population age 12 and older admitting to use within the past month. While cocaine is the second most commonly used illicit drug, it is used by less than 1% of the population. Only a small minority of Americans use hallucinogens, inhalants, heroin, or illicitly manufactured methamphetamine, although the potential for abuse of or dependence on these substances is high. Illicit (non-medical) use of prescription-type drugs, categorized as pain relievers, tranquilizers, stimulants, and sedatives, is a growing health problem in the U.S.

- While clinicians should be alert to the signs and symptoms of illicit drug use in patients, the added benefits of screening asymptomatic patients in primary care practice remains unclear. Toxicologic tests of blood or urine can provide objective evidence of drug use, but such tests do not distinguish between occasional users and those who are impaired by drug use. A few brief, standardized questionnaires have been shown to be valid and reliable in screening adolescent and adult patients for drug use/misuse. However, the clinical utility of these questionnaires is uncertain. The reported positive predictive values are variable and at best 83% when the questionnaires are applied in a general medical clinic. Moreover, the feasibility of routinely incorporating the questionnaires into busy primary care practices has yet to be assessed. The validity, reliability, and clinical utility of standardized questionnaires in screening for illicit drug use during pregnancy have not been adequately evaluated.
- Although drug-specific pharmacotherapy (e.g., buprenorphine for opiate abuse) and/or behavioral interventions (e.g., brief motivational counseling for cannabis misuse) have been proven effective in reducing illicit drug use in the short term, the longer-term effects of treatment on morbidity and mortality have been inadequately evaluated. Moreover, these treatments have been studied almost exclusively in individuals who have already developed medical, social, or legal problems due to

drug use, and their effectiveness in individuals identified through screening remains unclear. In all but one trial, treatment was delivered outside the primary care setting, often in specialized treatment facilities. More evidence is needed on the effectiveness of office-based treatments for illicit drug use/dependence.

- While interventions to prevent or reduce illicit drug use have been proposed for use in schools and sites of employment, evidence assessing preventive measures delivered in settings other than primary care practice was outside the scope of the USPSTF review.

This USPSTF recommendation was first published by: Agency for Healthcare Research and Quality, Rockville, MD. January 2008. http://www.USPreventiveServicesTaskForce.org.

Screening for Suicide Risk

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) concludes that the evidence is insufficient to recommend for or against routine screening by primary care clinicians to detect suicide risk in the general population. *Grade: I Statement.*

Clinical Considerations

- The strongest risk factors for attempted suicide include mood disorders or other mental disorders, comorbid substance abuse disorders, history of deliberate self-harm (DSH), and a history of suicide attempts. DSH refers to intentionally initiated acts of self-harm with a non-fatal outcome (including self-poisoning and self-injury). Suicide risk is assessed along a continuum ranging from suicidal ideation alone (relatively less severe) to suicidal ideation with a plan (more severe). Suicidal ideation with a specific plan of action is associated with a significant risk for attempted suicide.
- Screening instruments are commonly used in specialty clinics and mental health settings. The test characteristics of most commonly-used screening instruments (Scale for Suicide Ideation [SSI], Scale for Suicide Ideation-Worst [SSI-W], and the Suicidal Ideation Questionnaire [SIQ]) have not

been validated to assess suicide risk in primary care settings. There has been limited testing of the Symptom-Driven Diagnostic System for Primary Care (SDDS-PC) screening instrument in a primary care setting.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2004; 140:820-821.

Counseling and Interventions to Prevent Tobacco Use and Tobacco-Caused Disease in Adults and Pregnant Women

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends that clinicians ask all adults about tobacco use and provide tobacco cessation interventions for those who use tobacco products. *Grade: A Recommendation*.

The USPSTF recommends that clinicians ask all pregnant women about tobacco use and provide augmented, pregnancy-tailored counseling for those who smoke. *Grade: A Recommendation*.

Clinical Considerations

- This recommendation applies to adults 18 years or older and all pregnant women regardless of age. The USPSTF plans to issue a separate recommendation statement about counseling to prevent tobacco use in nonpregnant adolescents and children.
- Various primary care clinicians may deliver effective interventions. There is a dose-response relationship between quite rates and the intensity of counseling (that is, more or longer sessions improve quit rates). Quit rates seem to plateau after 90 minutes of total counseling contact time. Helpful components of counseling include problem-solving guidance for smokers (to help them develop a plan to quit and overcome common barriers to quitting) and the

provision of social support as part of treatment. Complementary practices that improve cessation rates include motivational interviewing, assessing readiness to change, offering more intensive counseling or referrals, and using telephone "quit lines."

- Combination therapy with counseling and medications is more effective at increasing cessation rates than either component alone. Pharmacotherapy approved by the U.S. Food and Drug Administration and identified as effective for treating tobacco dependence in nonpregnant adults includes several forms of nicotine replacement therapy (gum, lozenge, transdermal patch, inhaler, and nasal spray), sustained-release bupropion, and varenicline.
- Detailed reviews and recommendations about clinical interventions for tobacco cessation are available in the U.S. Public Health Service Clinical Practice Guideline "Treating Tobacco Use and Dependence: 2008 Update" (available at http://www.surgeongeneral.gov/tobacco).

  Tobacco-related recommendations from the Centers for Disease Control and Prevention's Guide to Community Preventive Services are available at: http://www.thecommunityguide.org/tobacco/index.html.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2009; 150:551-555.

Metabolic, Nutritional, and Endocrine Conditions

Behavioral Counseling in Primary Care to Promote a Healthy Diet

NOTE: The USPSTF was updating its recommendation on this topic during publication of *The Guide to Clinical Preventive Services 2010-2011*. For the most recent recommendation, please visit the USPSTF Web site at: http://www.USPreventiveServicesTaskForce.org or the USPSTF's Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov. You can search the ePSS for recommendations by patient age, sex, and pregnancy status, and you can download the recommendations as well as receive automatic updates to your PDA.

Folic Acid to Prevent Neural Tube Defects

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends that all women planning or capable of pregnancy take a daily supplement containing 0.4 to 0.8 mg (400 to 800 µg) of folic acid. *Grade: A Recommendation*.

Clinical Considerations

- This recommendation statement applies to women who are planning or capable of pregnancy, but it does not apply to women who have had a previous pregnancy affected by neural tube defects or women taking certain antiseizure medicines. Most organizations recommend that these women take higher doses of folic acid.
- The use of certain antiseizure medicines and a personal or family history of neural tube defects are well-established risk factors. Other reported risk factors include mutations in folate-related enzymes, maternal diabetes, and obesity.
- Most studies indicate the need to start folic acid supplementation at least 1 month before conception and to continue daily supplements through the first 2 to 3 months of pregnancy. Studies also indicate that 50% of pregnancies in the United States are unplanned, and clinicians should therefore advise all women who are capable of pregnancy to take folic acid supplements.

- Good evidence from randomized trials in settings without fortification of food suggests that a multivitamin with 0.8 mg (800 µg) of folic acid reduces the risk for neural tube defects. Observational studies done before fortification report a reduction of neural tube defects in women taking a supplement with 0.4 mg (400 µg) of folic acid (the generally available dose). Evidence indicates that most women in the United States are not ingesting fortified foods at a level thought to provide optimal benefit. In a setting in which food is fortified with folic acid, the effective amount of additional folic acid supplementation is unclear.

This USPSTF recommendation was first published in: *Ann Intern Med* 2009; 150:626-631.

Screening for Hemochromatosis

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends against routine genetic screening for hereditary hemochromatosis in the asymptomatic general population. *Grade: D Recommendation.*

Clinical Considerations

- This recommendation applies to asymptomatic persons. This recommendation does not include individuals with signs or symptoms that would include hereditary hemochromatosis in the differential diagnosis. Furthermore, it does not include individuals with a family history of clinically detected or screening-detected probands for hereditary hemochromatosis.
- Clinically important disease due to hereditary hemochromatosis appears to be rare. Even among individuals with mutations on the hemochromatosis *(HFE)* gene, it appears that only a small subset will develop symptoms of hemochromatosis. An even smaller proportion of these individuals will develop advanced stages of clinical disease.
- Clinically recognized hereditary hemochromatosis is primarily associated with the *HFE* mutation C282Y. Although this is a relatively common mutation in the U.S. population, great racial and ethnic variations exist. The frequency of homozygosity is 4.4 per 1000 among white persons,

with much lower frequencies among Hispanic persons (0.27 per 1000), black persons (0.14 per 1000), and Asian-American persons (<0.001 per 1000). Screening of family members of probands identifies the highest prevalence of undetected C282Y homozygotes (23 percent of all family members tested), particularly among siblings (33 percent homozygosity).

- The natural history of disease due to hereditary hemochromatosis is not well understood but appears to vary considerably among individuals. Clinically recognized hereditary hemochromatosis is about twice as common in men as in women. Iron accumulation and disease expression are modified by environmental factors, including blood loss or donation, alcohol use, diet, and infections such as viral hepatitis.
- Among C282Y homozygotes newly identified in the general population by genotypic screening, 6 percent of those undergoing further evaluation had cirrhosis (representing 1.4 percent of all newly screening-identified C282Y homozygotes). Cirrhosis is a serious, late-stage disease development, and its prevention would be a major goal of screening and treatment.
- Individuals with a family member, especially a sibling, who is known to have hereditary hemochromatosis may be more likely to develop symptoms. These individuals should be counseled regarding genotyping, with further diagnostic testing as warranted as part of case-finding.

- In addition to genotyping, more common laboratory testing can sometimes identify iron overload. Clinical screening with these laboratory tests, or phenotypic screening, was not included in the evidence synthesis on which this recommendation is based. Genotyping primarily focuses on the identification of the C282Y mutation on *HFE*. While other mutations exist, C282Y homozygosity is most commonly associated with clinical manifestations. Identifying an individual with the genotypic predisposition does not accurately predict the future risk for disease manifestation.
- Therapeutic phlebotomy is the primary treatment for hemochromatosis. Treated individuals report inconsistent improvement of their signs and symptoms. It is uncertain whether cirrhosis at diagnosis confers a worse prognosis based on the potential lack of reversibility of liver damage. Recent research reports survival rates in treated individuals with or without cirrhosis that are similar to rates in healthy controls. The degree to which clinically important manifestations can be averted remains uncertain, as does the optimal time for early treatment.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2006; 145:204-208.

Hormone Therapy for the Prevention of Chronic Conditions in Postmenopausal Women

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends against the routine use of combined estrogen and progestin for the prevention of chronic conditions in postmenopausal women. *Grade: D Recommendation.*

The USPSTF recommends against the routine use of unopposed estrogen for the prevention of chronic conditions in postmenopausal women who have had a hysterectomy. *Grade: D Recommendation.*

Clinical Considerations

- The balance of benefits and harms for a woman will be influenced by her personal preferences, her risks for specific chronic diseases, and the presence of menopausal symptoms. A shared decisionmaking approach to preventing chronic diseases in perimenopausal and postmenopausal women involves consideration of individual risk factors and preferences in selecting effective interventions for reducing the risks for fracture, heart disease, and cancer. See other USPSTF recommendations for prevention of chronic diseases (screening for osteoporosis, high blood pressure, lipid disorders,

breast cancer, and colorectal cancer; and counseling to prevent tobacco use) available at: www.USPreventiveServicesTaskForce.org.

- The USPSTF did not consider the use of hormone therapy for the management of menopausal symptoms, which is the subject of recommendations by other expert groups. Women and their clinicians should discuss the balance of risks and benefits before deciding to initiate or continue hormone therapy for menopausal symptoms. For example, for combined estrogen and progestin, some risks (such as the risks for venous thromboembolism, coronary heart disease [CHD], and stroke) arise within the first 1 to 2 years of therapy, and other risks (such as the risk for breast cancer) appear to increase with longer-term hormone therapy. The populations of women using hormone therapy for symptom relief may differ from those who would use hormone therapy for prevention of chronic disease (e.g., age differences). Other expert groups have recommended that women who decide to take hormone therapy to relieve menopausal symptoms use the lowest effective dose for the shortest possible time.
- Although estrogen alone or in combination with progestin reduces the risk for fractures in women, other effective medications (e.g., bisphosphonates and calcitonin) are available for treating women

with low bone density to prevent fractures. The role of chemopreventive agents in preventing fractures in women without low bone density is unclear. The USPSTF addressed screening for osteoporosis in postmenopausal women in 2002.

- Unopposed estrogen increases the risk for endometrial cancer in women who have an intact uterus. Clinicians should use a shared decision-making approach when discussing the possibility of using unopposed estrogen in women who have not had a hysterectomy.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2005; 142:855-860.

Screening for Iron Deficiency Anemia—Including Iron Supplementation for Children and Pregnant Women

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) concludes that evidence is insufficient to recommend for or against routine screening for iron deficiency anemia in asymptomatic children aged 6 to 12 months. *Grade: I Statement.*

The USPSTF recommends routine screening for iron deficiency anemia in asymptomatic pregnant women. *Grade: B Recommendation.*

The USPSTF recommends routine iron supplementation for asymptomatic children aged 6 to 12 months who are at increased risk for iron deficiency anemia (see Clinical Considerations for a discussion of increased risk). *Grade: B Recommendation.*

The USPSTF concludes that evidence is insufficient to recommend for or against routine iron supplementation for asymptomatic children aged 6 to 12 months who are at average risk for iron deficiency anemia. *Grade: I Statement.*

The USPSTF concludes that evidence is insufficient to recommend for or against routine iron supplementation for non-anemic pregnant women. *Grade: I Statement.*

Clinical Considerations

- These USPSTF recommendations address screening for iron deficiency anemia and iron supplementation in children aged 6 to 12 months who are at increased risk and average risk, in asymptomatic pregnant women, and in non-anemic pregnant women. Infants younger than 6 months of age, older children, non-pregnant women, and men are not addressed.
- Iron deficiency anemia can be defined as iron deficiency (abnormal values for serum ferritin, transferrin saturation, and free erythrocyte protoporphyrin) with a low hemoglobin or hematocrit value. Iron deficiency is much more common than iron deficiency anemia and is part of a continuum that ranges from iron depletion to iron deficiency anemia. Many of the negative health outcomes of iron deficiency are associated with its extreme manifestation, iron deficiency anemia. Iron deficiency has also been associated with negative neurodevelopmental outcomes in children.
- Other causes of anemia vary by population and include other nutritional deficiencies, abnormal hemoglobin (e.g., thalassemia), enzyme defects, and anemia associated with acute and chronic infections.
- In the U.S., race, income, education, and other socioeconomic factors are associated with iron deficiency and iron deficiency anemia. Individuals considered to be at high risk for iron deficiency include adult females, recent immigrants, and among adolescent females, fad dieters, and those

who are obese. Premature and low birth weight infants are also at increased risk for iron deficiency.

- Venous hemoglobin is more accurate than capillary hemoglobin for identifying anemia. Ferritin has the highest sensitivity and specificity for diagnosing iron deficiency in anemic patients.
- Iron deficiency anemia is usually treated with oral iron preparations. The likelihood that iron deficiency anemia identified by screening will respond to treatment is unclear because many families do not adhere to treatment and because the rate of spontaneous resolution is high. 97 percent of infant formula sold in the U.S. is iron-fortified. Substantial reductions in the incidence of iron deficiency and iron deficiency anemia have been demonstrated in healthy infants fed iron-fortified formula or iron-fortified cereal, compared with infants fed cow's milk or unfortified formula.
- Iron supplements accounted for 30 percent of fatal pediatric pharmaceutical overdoses occurring between 1983 and 1990, and iron poisoning has been observed even in the context of controlled trials in which parents were instructed in the safe storage and use of iron products. A reduction in deaths of children due to iron overdose was observed when unit-dose packaging was required between 1998 and 2002; this requirement was overturned by the courts in 2003.

This USPSTF recommendation was first published by: Agency for Healthcare Research and Quality, Rockville, MD. May 2006. http://www.USPreventiveServicesTaskForce.org.

Screening for Obesity in Adults

NOTE: An update to this recommendation is in progress. Please visit the USPSTF Web site at http://www.USPreventiveServicesTaskForce.org or the Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov for the most current recommendation.

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends that clinicians screen all adult patients for obesity and offer intensive counseling and behavioral interventions to promote sustained weight loss for obese adults. *Grade: B Recommendation.*

The USPSTF concludes that the evidence is insufficient to recommend for or against the use of moderate- or low-intensity counseling together with behavioral interventions to promote sustained weight loss in obese adults. *Grade: I Statement.*

The USPSTF concludes that the evidence is insufficient to recommend for or against the use of counseling of any intensity and behavioral interventions to promote sustained weight loss in overweight adults. *Grade: I Statement.*

Clinical Considerations

- A number of techniques, such as bioelectrical impedance, dual-energy x-ray absorptiometry, and total body water can measure body fat, but it is impractical to use them routinely. Body mass index

(BMI), which is simply weight adjusted for height, is a more practical and widely-used method to screen for obesity. Increased BMI is associated with an increase in adverse health effects. Central adiposity increases the risk for cardiovascular and other diseases independent of obesity. Clinicians may use the waist circumference as a measure of central adiposity. Men with waist circumferences greater than 102 cm (> 40 inches) and women with waist circumferences greater than 88 cm (> 35 inches) are at increased risk for cardiovascular disease. The waist circumference thresholds are not reliable for patients with a BMI greater than 35.

- Expert committees have issued guidelines defining overweight and obesity based on BMI. Persons with a BMI between 25 and 29.9 are overweight and those with a BMI of 30 and above are obese. There are 3 classes of obesity: class I (BMI 30-34.9), class II (BMI 35-39.9), and class III (BMI 40 and above). BMI is calculated either as weight in pounds divided by height in inches squared multiplied by 703, or as weight in kilograms divided by height in meters squared. The National Institutes of Health (NIH) provides a BMI calculator at www.nhlbisupport.com/bmi/ and a table at www.nhlbi.nih.gov/guidelines/obesity/bmi_tbl.htm.
- The most effective interventions combine nutrition education and diet and exercise counseling with behavioral strategies to help patients acquire the skills and supports needed to change eating patterns

and to become physically active. The 5-A framework (Assess, Advise, Agree, Assist, and Arrange) has been used in behavioral counseling interventions such as smoking cessation and may be a useful tool to help clinicians guide interventions for weight loss. Initial interventions paired with maintenance interventions help ensure that weight loss will be sustained over time.

- It is advisable to refer obese patients to programs that offer intensive counseling and behavioral interventions for optimal weight loss. The USPSTF defined intensity of counseling by the frequency of the intervention. A high-intensity intervention is more than 1 person-to-person (individual or group) session per month for at least the first 3 months of the intervention. A medium-intensity intervention is a monthly intervention, and anything less frequent is a low-intensity intervention. There are limited data on the best place for these interventions to occur and on the composition of the multidisciplinary team that should deliver high-intensity interventions.
- The USPSTF concluded that the evidence on the effectiveness of interventions with obese people may not be generalizable to adults who are overweight but not obese. The evidence for the effectiveness of interventions for weight loss among overweight adults, compared with obese adults, is limited.
- Orlistat and sibutramine, approved for weight loss by the Food and Drug Administration, can produce modest weight loss (2.6-4.8 kg) that can be

sustained for at least 2 years if the medication is continued. The adverse effects of orlistat include fecal urgency, oily spotting, and flatulence; the adverse effects of sibutramine include an increase in blood pressure and heart rate. There are no data on the long-term (longer than 2 years) benefits or adverse effects of these drugs. Experts recommend that pharmacological treatment of obesity be used only as part of a program that also includes lifestyle modification interventions, such as intensive diet and/or exercise counseling and behavioral interventions.

- There is fair to good evidence to suggest that surgical interventions such as gastric bypass, vertical banded gastroplasty, and adjustable gastric banding can produce substantial weight loss (28 to > 40 kg) in patients with class III obesity. Clinical guidelines developed by the National Heart, Lung, and Blood Institute (NHLBI) Expert Panel on the identification, evaluation, and treatment of overweight and obesity in adults recommend that these procedures be reserved for patients with class III obesity and for patients with class II obesity who have at least 1 other obesity-related illness. The postoperative mortality rate for these procedures is 0.2 percent. Other complications include wound infection, re-operation, vitamin deficiency, diarrhea, and hemorrhage. Re-operation may be necessary in up to 25 percent of patients. Patients should receive a psychological evaluation prior to undergoing these procedures. The long-term health effects of surgery

for obesity are not well characterized.

- The data supporting the effectiveness of interventions to promote weight loss are derived mostly from women, especially white women. The effectiveness of the interventions is less well established in other populations, including the elderly. The USPSTF believes that, although the data are limited, these interventions may be used with obese men, physiologically mature older adolescents, and diverse populations, taking into account cultural and other individual factors.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2003; 139:930-932.

Behavioral Counseling in Primary Care to Promote Physical Activity

NOTE: The USPSTF was updating its recommendation on this topic during publication of *The Guide to Clinical Preventive Services 2010-2011*. For the most recent recommendation, please visit the USPSTF Web site at: http://www.USPreventiveServicesTaskForce.org or the USPSTF's Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov. You can search the ePSS for recommendations by patient age, sex, and pregnancy status, and you can download the recommendations as well as receive automatic updates to your PDA.

Screening for Thyroid Disease

NOTE: An update to this recommendation is in progress. Please visit the USPSTF Web site at http://www.USPreventiveServicesTaskForce.org or the Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov for the most current recommendation.

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) concludes the evidence is insufficient to recommend for or against routine screening for thyroid disease in adults. *Grade: I Statement.*

Clinical Considerations

- Subclinical thyroid dysfunction is defined as an abnormal biochemical measurement of thyroid hormones without any specific clinical signs or symptoms of thyroid disease and no history of thyroid dysfunction or therapy. This includes individuals who have mildly elevated TSH and normal thyroxine (T4) and triiodothyronine (T3) levels (subclinical hypothyroidism), or low TSH and normal T4 and T3 levels (subclinical hyperthyroidism). Individuals with symptoms of thyroid dysfunction, or those with a history of thyroid disease or treatment, are excluded from this definition and are not the subject of these recommendations.
- When used to confirm suspected thyroid disease in patients referred to a specialty endocrine clinic, TSH has a high sensitivity (98%) and specificity

(92%). When used for screening primary care populations, the positive predictive value (PPV) of TSH in detecting thyroid disease is low; further, the interpretation of a positive test result is often complicated by an underlying illness or by frailty of the individual. In general, values for serum TSH below 0.1 mU/L are considered low and values above 6.5 mU/L are considered elevated.

- Clinicians should be aware of subtle signs of thyroid dysfunction, particularly among those at high risk. People at higher risk for thyroid dysfunction include the elderly, post-partum women, those with high levels of radiation exposure (>20 mGy), and patients with Down syndrome. Evaluating for symptoms of hypothyroidism is difficult in patients with Down syndrome because some symptoms and signs (e.g., slow speech, thick tongue, and slow mentation) are typical findings in both conditions.
- Subclinical hyperthyroidism has been associated with atrial fibrillation, dementia, and, less clearly, with osteoporosis. However, progression from subclinical to clinical disease in patients without a history of thyroid disease is not clearly established.
- Subclinical hypothyroidism is associated with poor obstetric outcomes and poor cognitive development in children. Evidence for dyslipidemia, atherosclerosis, and decreased quality of life in adults with subclinical hypothyroidism in the general population is inconsistent and less convincing.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2004; 140(2)125-127.

Screening for Type 2 Diabetes Mellitus in Adults

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends screening for type 2 diabetes in asymptomatic adults with sustained blood pressure (either treated or untreated) greater than 135/80 mm Hg. *Grade: B Recommendation.*

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for type 2 diabetes in asymptomatic adults with blood pressure of 135/80 mm Hg or lower. *Grade: I Statement.*

Clinical Considerations

- This recommendation concerns adults without symptoms of diabetes or evidence of possible diabetes complications. Symptoms of diabetes include polyuria, polydipsia, and polyphagia. Possible diabetes complications include nonhealing ulcers or infections and established vascular disease (for example, coronary artery disease, stroke, and peripheral artery disease). Persons with these symptoms or conditions should be tested for diabetes.
- In persons with blood pressure of 135/80 mm Hg or lower, screening may be considered on an individual basis if knowledge of diabetes status would help inform decisions about coronary heart

disease (CHD) prevention strategies, including assessment of CHD risk and subsequent consideration of lipid-lowering agents or aspirin.

For example, consider a patient for whom lipid-lowering treatment would be recommended if his or her 10-year CHD risk was 20% or greater. If the patient's calculated risk was 17% without diabetes and greater than 20% with diabetes, then screening for diabetes would be useful in determining lipid treatment. However, if the calculated risk was 10% without diabetes and 15% with diabetes, then the screening test result would have no effect on the decision whether to use lipid-lowering treatment.

- Blood pressure is an important predictor of complications of cardiovascular disease (CVD) (including CHD and stroke) in persons with type 2 diabetes mellitus and should be measured as the first step in applying this recommendation. The examination of global CHD and stroke risk allows the clinician to determine how aggressive treatment for CVD risk factors needs to be. In making this assessment, clinicians should use any of several validated CHD risk assessment calculators, such as the calculator based on Framingham Heart Study data (available at http://hp2010.nhlbihin.net/atpiii.calculator.asp).
- Three tests have been used to screen for diabetes: fasting plasma glucose, 2-hour postload plasma glucose, and hemoglobin A1c. Each has advantages and disadvantages. The American Diabetes Association has recommended the fasting plasma

glucose test for screening because it is easier and faster to perform, more convenient and acceptable to patients, and less expensive than other screening tests. The fasting plasma glucose test has more reproducible results than does the 2-hour postload plasma glucose test, has less intraindividual variation, and has similar predictive value for development of microvascular complications of diabetes. The American Diabetes Association defines diabetes as a fasting plasma glucose level of 126 mg/dL or greater and recommends confirmation with a repeated screening test on a separate day, especially for people with borderline results.

- Blood pressure targets should be lower for persons who have type 2 diabetes mellitus than for those who do not. Lower blood pressure targets for persons with diabetes and high blood pressure reduce CVD events compared with higher targets. Attention to other risk factors for CVD, such as physical inactivity, lipid levels, diet, and obesity, is also important, both to decrease risk for CHD and to improve glucose control.
- The optimal screening interval is not known. The American Diabetes Association, on the basis of expert opinion, recommends a 3-year interval.
- There is no evidence of benefit in health outcomes from screening for impaired glucose tolerance (IGT) or impaired fasting glucose (IFG). However, intensive programs of lifestyle modification (diet, exercise, and behavior) do reduce the incidence of

diabetes. Regardless of whether the clinician and patient decide to screen for diabetes, people should eat a healthful diet, be active, and maintain a healthy weight—these behaviors have other benefits in addition to preventing or forestalling type 2 diabetes. The USPSTF recommends intensive interventions for obese persons who desire to lose weight. Population-based approaches to increasing physical activity and reducing obesity, as recommended by the Task Force on Community Preventive Services, should be supported.

- Evidence and USPSTF recommendations on blood pressure, diet, physical activity, and obesity are available at http://www.USPreventiveServices TaskForce.org. The reviews and recommendations for the Task Force on Community Preventive Services may be found at http://www.thecommunityguide.org.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2008; 148:846-854.

Screening for Osteoporosis

NOTE: An update to this recommendation is in progress. Please visit the USPSTF Web site at http://www.USPreventiveServicesTaskForce.org or the Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov for the most current recommendation.

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends that women aged 65 and older be screened routinely for osteoporosis. The USPSTF recommends that routine screening begin at age 60 for women at increased risk for osteoporotic fractures (see Clinical Considerations for discussion of women at increased risk). *Grade: B Recommendation.*

The USPSTF makes no recommendation for or against routine osteoporosis screening in postmenopausal women who are younger than 60 or in women aged 60-64 who are not at increased risk for osteoporotic fractures. *Grade: C Recommendation.*

Clinical Considerations

- Modeling analysis suggests that the absolute benefits of screening for osteoporosis among women aged

60-64 who are at increased risk for osteoporosis and fracture are comparable to those of routine screening in older women. The exact risk factors that should trigger screening in this age group are difficult to specify based on evidence. Lower body weight (weight < 70 kg) is the single best predictor of low bone mineral density. Low weight and no current use of estrogen therapy are incorporated with age into the 3-item Osteoporosis Risk Assessment Instrument (ORAI). There is less evidence to support the use of other individual risk factors (for example, smoking, weight loss, family history, decreased physical activity, alcohol or caffeine use, or low calcium and vitamin D intake) as a basis for identifying high-risk women younger than 65. At any given age, African-American women on average have higher bone mineral density (BMD) than white women and are thus less likely to benefit from screening.

- Among different bone measurement tests performed at various anatomical sites, bone density measured at the femoral neck by dual-energy x-ray absorptiometry (DXA) is the best predictor of hip fracture and is comparable to forearm measurements for predicting fractures at other sites. Other technologies for measuring peripheral sites include quantitative ultrasonography (QUS), radiographic absorptiometry, single energy x-ray absorptiometry, peripheral dual-energy x-ray

absorptiometry, and peripheral quantitative computed tomography. Recent data suggest that peripheral bone density testing in the primary care setting can also identify postmenopausal women who have a higher risk for fracture over the short term (1 year). Further research is needed to determine the accuracy of peripheral bone density testing in comparison with dual-energy x-ray absorptiometry (DXA). The likelihood of being diagnosed with osteoporosis varies greatly depending on the site and type of bone measurement test, the number of sites tested, the brand of densitometer used, and the relevance of the reference range.

- Estimates of the benefits of detecting and treating osteoporosis are based largely on studies of bisphosphonates. Some women, however, may prefer other treatment options (for example, hormone replacement therapy, selective estrogen receptor modulators, or calcitonin) based on personal preferences or risk factors. Clinicians should review with patients the relative benefits and harms of available treatment options, and uncertainties about their efficacy and safety, to facilitate an informed choice.

- No studies have evaluated the optimal intervals for repeated screening. Because of limitations in the precision of testing, a minimum of 2 years may be

needed to reliably measure a change in bone mineral density; however, longer intervals may be adequate for repeated screening to identify new cases of osteoporosis. Yield of repeated screening will be higher in older women, those with lower BMD at baseline, and those with other risk factors for fracture.

- There are no data to determine the appropriate age to stop screening and few data on osteoporosis treatment in women older than 85. Patients who receive a diagnosis of osteoporosis fall outside the context of screening but may require additional testing for diagnostic purposes or to monitor response to treatment.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2002; 137:526-528.

Obstetric and Gynecologic Conditions

Screening for Bacterial Vaginosis in Pregnancy

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends against screening for bacterial vaginosis in asymptomatic pregnant women at low risk for preterm delivery. *Grade: D Recommendation.*

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for bacterial vaginosis in asymptomatic pregnant women at high risk for preterm delivery. *Grade: I Statement.*

Clinical Considerations

- Several factors have been associated with increased risk for preterm delivery. All of these associations are small to moderate. These factors include, but are not limited to, African-American race or ethnicity, body mass index less than 20 kg/m^2, previous preterm delivery, vaginal bleeding, a short cervix (<2.5 cm), pelvic infection, and bacterial vaginosis. These factors can act in isolation or in combination. Furthermore, bacterial vaginosis in pregnancy is more common among African-American women,

women of low socioeconomic status, and those who have previously delivered low-birthweight infants. For the purpose of the current recommendation, women were considered to be at low risk if they had no previous preterm delivery or other risk factors for preterm delivery (often these were nulliparous women). Women were considered to be at high risk if they had a previous preterm delivery.

- Bacterial vaginosis is diagnosed by using the Amsel clinical criteria or Gram stain. With the Amsel criteria, the clinical diagnosis is made by fulfilling 3 of 4 criteria: vaginal pH greater than 4.7, the presence of clue cells on wet mount, thin homogenous discharge, and amine "fishy odor" when potassium hydroxide is added to the discharge.
- This recommendation statement addresses screening for bacterial vaginosis in asymptomatic women. Treatment of symptomatic cases should be based on the clinical situation.
- Oral metronidazole and oral clindamycin, as well as vaginal metronidazole gel or clindamycin cream, are used to treat bacterial vaginosis. The optimal treatment regimen for pregnant women with bacterial vaginosis is unclear. Refer to the Centers for Disease Control and Prevention Web site for current treatment recommendations (http://www.cdc.gov/std/treatment/2006/vaginal-discharge.htm#vagdis2).

This USPSTF recommendation was first published in: *Ann Intern Med.* 2008; 148(3):214-219.

Primary Care Interventions to Promote Breastfeeding

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends interventions during pregnancy and after birth to promote and support breastfeeding. *Grade: B Recommendation.*

Clinical Considerations

- This recommendation applies to pregnant women, new mothers, and young children. In rare circumstances involving health issues in mothers or infants, such as HIV infection or galactosemia, breastfeeding may be contraindicated and interventions to promote breastfeeding may not be appropriate. Interventions to promote and support breastfeeding may also involve a woman's partner, other family members, and friends.
- The current literature does not allow assessment of the individual aspects of multicomponent interventions or comparative effectiveness assessments of single-component interventions. The promotion and support of breastfeeding may be accomplished through interventions over the course of pregnancy; around the time of delivery; and after birth, while breastfeeding is under way. Interventions may include multiple strategies, such as formal breastfeeding education for mothers and families, direct support of mothers during

breastfeeding observations, and the training of health professional staff about breastfeeding and techniques for breastfeeding support. Evidence suggests that interventions that include both prenatal and postnatal components may be the most effective at increasing breastfeeding duration. Many successful programs include peer support, prenatal breastfeeding education, or both.

This USPSTF recommendation was first published in: *Ann Intern Med* 2008; 149:560-564.

Screening for Gestational Diabetes Mellitus

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for gestational diabetes mellitus (GDM), either before or after 24 weeks gestation. *Grade: I Statement.*

Clinical Considerations

- This recommendation concerns pregnant women who have not previously been diagnosed with diabetes.
- Until there is better evidence, clinicians should discuss screening for GDM with their patients and make case-by-case decisions. Discussions should include information about the uncertainty of benefits and harms as well as the frequency of positive screening test results.
- Women who are obese, older than 25 years of age, have a family history of diabetes, have a history of previous GDM, or are of certain ethnic groups (Hispanic, American Indian, Asian, or African-American) are at increased risk of developing GDM.
- In the United States, the most common screening test is an initial 50-gram 1-hour glucose challenge test (GCT). If the result of the GCT is abnormal, variably defined as either greater than 130 mg/dL or

140 mg/dL, the patient undergoes a 100-gram 3-hour oral glucose tolerance test (OGTT). Two or more abnormal values on the OGTT are considered a diagnosis of GDM.

- Most screening is conducted between 24 and 28 weeks gestation. There is little evidence about the value of earlier screening.
- Treatment usually includes recommendations for physical activity and dietary modification. In addition, treatment sometimes includes medication (either insulin or oral hypoglycemic agents), support from diabetes educators and nutritionists, and increased surveillance in prenatal care. The extent to which these interventions improve health outcomes is uncertain.
- Nearly all pregnant women should be encouraged to achieve moderate weight gain based on their pre-pregnancy body mass index (BMI) and to participate in physical activity.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2008; 148:759-765.

Screening for Rh (D) Incompatibility

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) strongly recommends Rh (D) blood typing and antibody testing for all pregnant women during their first visit for pregnancy-related care. *Grade: A Recommendation.*

The USPSTF recommends repeated Rh (D) antibody testing for all unsensitized Rh (D)-negative women at 24-28 weeks' gestation, unless the biological father is known to be Rh (D)-negative. *Grade: B Recommendation.*

Clinical Considerations

- Administration of a full (300μg) dose of Rh (D) immunoglobulin is recommended for all unsensitized Rh (D)-negative women after repeated antibody testing at 24-28 weeks' gestation.
- If an Rh (D)-positive or weakly Rh (D)-positive (e.g., D^u-positive) infant is delivered, a dose of Rh (D) immunoglobulin should be repeated postpartum, preferably within 72 hours after delivery. Administering Rh (D) immunoglobulin at other intervals after delivery has not been studied.
- Unless the biological father is known to be Rh (D)-negative, a full dose of Rh (D) immunoglobulin is recommended for all unsensitized Rh (D)-negative women after amniocentesis and after induced or

spontaneous abortion; however, if the pregnancy is less than 13 weeks, a 50 μg dose is sufficient.

- The benefit of routine administration of Rh (D) immunoglobulin after other obstetric procedures or complications such as chorionic villus sampling, ectopic pregnancy termination, cordocentesis, fetal surgery or manipulation (including external version), antepartum placental hemorrhage, abdominal trauma, antepartum fetal death, or stillbirth is uncertain due to inadequate evidence.

This USPSTF recommendation was first published by: Agency for Healthcare Research and Quality, Rockville, MD. February 2004. http://www.USPreventiveServicesTaskForce.org.

Screening for Glaucoma

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) found insufficient evidence to recommend for or against screening adults for glaucoma. *Grade: I Statement.*

Clinical Considerations

- Primary open angle glaucoma (POAG) is a chronic condition characterized by a loss of retinal ganglion cell axons. It is manifested initially by peripheral visual field loss; in an uncertain number of cases, it progresses to impairment in important vision-related function and even to irreversible blindness.
- The diagnosis of POAG is not made on the basis of a single test but on the finding of characteristic degenerative changes in the optic disc and defects in visual fields. Although increased intraocular pressure (IOP) has previously been considered an important part in the definition of this condition, it is now known that many people with POAG do not have increased IOP; hence, there is little value of using tonometry to screen for POAG.

- Increased IOP, family history, older age, and being of African American descent place an individual at increased risk for glaucoma. Older African Americans have a higher prevalence of glaucoma and perhaps a more rapid disease progression, and if it is shown that screening for glaucoma reduces the development of visual impairment, African Americans would likely have greater absolute benefit than whites. People with a limited life expectancy would likely have little to gain from glaucoma screening.
- The natural history of glaucoma is heterogeneous and not well defined. There is a subgroup of people with POAG in whom there is either no disease progression, or the progression is so slow that the condition would never have an important effect on their vision. The size of this subgroup is uncertain and may depend on the ethnicity and age of the population. Others experience more rapidly progressing disease, leading to reduced vision-related function within 10 years. Whether an individual's glaucoma will progress cannot be predicted with precision, but those with higher levels of IOP and worse visual fields at baseline, and those who are older, tend to be at greater risk for the more rapid progression of glaucoma. Whether the rate of progression of visual field defects remains uniform throughout the course of glaucoma is unknown.

- Measurement of visual fields can be difficult. The reliability of a single visual field measurement may be low; several consistent visual field measurements are needed to establish the presence of defects. Dilated opthalmoscopy or slit lamp exam are used by specialists to examine changes in the optic disc; however, even experts vary in their ability to detect glaucomatous optic disc progression. Additionally, there is no agreed-upon single standard to define and measure progression of visual field defects.
- The primary treatments for POAG reduce IOP; these include medications, laser therapy, or surgery. These treatments effectively reduce the development and progression of small, visual field defects. The magnitude of their effectiveness, however, in reducing impairment in vision-related function is uncertain. Harms caused by these interventions include formation of cataracts, harms resulting from cataract surgery, and harms of topical medication.

This USPSTF recommendation was first published by: Agency for Healthcare Research and Quality. Rockville, MD. March 2005. http://www.USPreventiveServicesTask Force.org.

Screening for Impaired Visual Acuity in Older Adults

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) concludes that the evidence is insufficient to assess the balance of benefits and harms of screening for visual acuity for the improvement of outcomes in older adults. *Grade: I Statement.*

Clinical Considerations

- This recommendation statement applies to adults 65 years or older.
- Older age is an important risk factor for most types of visual impairment. Additional risk factors for cataracts are smoking, alcohol use, exposure to ultraviolet light, diabetes, corticosteroid use, and black race. Risk factors for AMD include smoking, family history, and white race.
- A visual acuity test (for example, the Snellen eye chart) is the usual method for screening for visual acuity impairment in the primary care setting. Screening questions are not as accurate as visual acuity testing for identifying visual acuity impairment. Evidence is limited on the use of other vision tests, including pinhole testing, the Amsler grid (a chart used to test central vision in order to detect AMD), or funduscopy (visual inspection of the interior of the eye), in screening in primary care to detect visual impairment due to AMD or cataracts.

- Most older adults will need some type of corrective lenses. The treatment for cataracts is surgical removal of the cataract. Treatments for exudative (or wet) AMD include laser photocoagulation, verteporfin, and intravitreal injections of vascular endothelial growth factor inhibitors. Antioxidant vitamins and minerals are treatments for dry AMD, but evidence about their effectiveness is limited.
- This recommendation does not cover screening for glaucoma. The USPSTF review and recommendation statement on screening for glaucoma are available on the USPSTF Web site (http://www.USPreventiveServicesTaskForce.org). Poor visual acuity is a risk factor for falls in older aduts. A USPSTF recommendation on preventing falls in older adults is in progress and will be available at the above Web site.

This USPSTF recommendation was first published in: *Ann Intern Med.* 2009; 151:37-43.

Section 3.

Recommendations for Children and Adolescents

All recommendation statements in this Guide are abridged. To see the full recommendation statements and recommendations published after March 2010, go to http://www.USPreventiveServicesTaskForce.org.

Screening for Elevated Blood Lead Levels in Children and Pregnant Women

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) concludes that evidence is insufficient to recommend for or against routine screening for elevated blood lead levels in asymptomatic children aged 1 to 5 who are at increased risk. *Grade: I Statement.*

The USPSTF recommends against routine screening for elevated blood lead levels in asymptomatic children aged 1 to 5 years who are at average risk. *Grade: D Recommendation.*

The USPSTF recommends against routine screening for elevated blood lead levels in asymptomatic pregnant women. *Grade: D Recommendation.*

Clinical Considerations

- This USPSTF recommendation addresses screening for elevated blood levels in children aged 1 to 5 years who are both at average and increased risk, and in asymptomatic pregnant women.
- The highest mean blood lead levels in the U.S. occur in children aged 1-5 years (geometric mean 1.9 µg/dL). Children under 5 years of age are at greater risk for elevated blood lead levels and lead

toxicity because of increased hand-to-mouth activity, increased lead absorption from the gastrointestinal tract, and the greater vulnerability of the developing central nervous system. Risk factors for increased blood lead levels in children and adults include: minority race/ethnicity; urban residence; low income; low educational attainment; older (pre-1950) housing; recent or ongoing home renovation or remodeling; pica exposure; use of ethnic remedies, certain cosmetics, and exposure to lead-glazed pottery; occupational and para-occupational exposures; and recent immigration. Risk factors for pregnant women include alcohol use, smoking, pica, and recent immigration status.

- Blood lead levels in childhood, after peaking at about 2 years of age, decrease during short- and long-term followup without intervention. Most lead is stored in bone. High bone lead levels can be present with normal blood lead levels, so that blood lead levels often do not reflect the total amount of lead in the body. This could explain the lack of effect of blood lead level-lowering measures on reducing neurotoxic effects.
- Screening tests for elevated blood lead levels include free erythrocyte (or zinc) protoporphyrin levels and capillary or venous blood lead levels. Erythrocyte (or zinc) protoporphyrin is insensitive to modest elevations in blood lead levels and lacks specificity. Blood lead concentration is more sensitive than

erythrocyte protoporphyrin for detecting modest lead exposure, but its accuracy, precision, and reliability can be affected by environmental lead contamination. Therefore, venous blood lead level testing is preferred to capillary sampling. Screening questionnaires may be of value in identifying children at risk for elevated blood lead levels but should be tailored for and validated in specific communities for clinical use.

- Treatment options in use for elevated blood lead levels include residential lead hazard-control efforts (i.e., counseling and education, dust or paint removal, and soil abatement), chelation, and nutritional interventions. In most settings, education and counseling is offered for children with blood lead levels from 10 to 20 μg/dL. Some experts have also recommended nutritional counseling for children with blood lead levels in this range. Residential lead hazard control is usually offered to children with blood lead levels ≥20 μg/dL, while chelation therapy is offered to children with blood lead levels ≥45 μg/dL.
- Community-based interventions for the primary prevention of lead exposure are likely to be more effective, and may be more cost-effective, than office-based screening, treatment, and counseling. Relocating children who do not yet have elevated blood lead levels but who live in settings with high lead exposure may be especially helpful.

Community, regional, and national environmental lead hazard reduction efforts, such as reducing lead in industrial emissions, gasoline, and cans, have proven highly effective in reducing population blood lead levels.

This USPSTF recommendation was first published in: *Pediatrics.* 2006; 118:e2514-e2518.

Screening for Congenital Hypothyroidism

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends screening for congenital hypothyroidism (CH) in newborns. *Grade: A Recommendation.*

Clinical Considerations

- This recommendation applies to all infants born in the U.S. Premature, very low birth weight and ill infants may benefit from additional screening because these conditions are associated with decreased sensitivity and specificity of screening tests.
- Screening for CH is mandated in all 50 states and the District of Columbia, though methods of screening vary. There are two main methods used in the U.S.: Primary TSH with backup T_4; and primary T_4 with backup TSH. A few states use both tests in initial screening. Clinicians should become familiar with the tests used in their area and the limitations of the employed screening strategy. For example, a primary TSH method may be falsely negative in low and very low birth weight infants with CH because of delayed elevation in TSH. Additionally, few states currently screen for centrally-mediated congenital hypothyroidism. Families should be provided with appropriate information about newborn screening tests,

including the benefits and harms of screening. They should be aware of the potential of a false positive test, and the process required for definitive testing. Nationally, only 1 in 25 positive screening tests are confirmed to be CH. Normal newborn screening results for CH should not preclude appropriate evaluation of infants presenting with clinical signs and symptoms suggestive of hypothyroidism.

- Infants should be tested between 2 and 4 days of age. Infants discharged from hospitals before 48 hours of life should be tested immediately before discharge. Specimens obtained in the first 24-48 hours of age may be falsely elevated for TSH regardless of the screening method used.
- Primary care clinicians should ensure that infants with abnormal screens receive confirmatory testing and begin appropriate treatment with thyroid hormone replacement within 2 weeks after birth. Children with positive confirmatory testing in whom no permanent cause of CH is found (such as lack of thyroid tissue on thyroid ultrasound or thyroid scan), should, at some time point after the age of 3 years, undergo a 30-day trial of reduced or discontinued thyroid hormone replacement therapy to determine if the hypothyroidism is permanent or transient.

This USPSTF recommendation was first published in: *Ann Fam Med.* 2008; 6(2):166.

Screening for Developmental Dysplasia of the Hip

Summary of Recommendation

The USPSTF concludes that evidence is insufficient to recommend routine screening for developmental dysplasia of the hip in infants as a means to prevent adverse outcomes. *Grade: I Statement.*

Clinical Considerations

- This USPSTF screening recommendation applies only to infants who do not have obvious hip dislocations or other abnormalities evident without screening. Developmental dysplasia of the hip (DDH) represents a spectrum of anatomic abnormalities in which the femoral head and the acetabulum are aligned improperly or grow abnormally. DDH can lead to premature degenerative joint disease, impaired walking, and pain. Risk factors for DDH include female gender, family history of DDH, breech positioning, and in utero postural deformities. However, the majority of cases of DDH have no identifiable risk factors.
- Screening tests for DDH have limited accuracy. The most common methods of screening are serial physical examinations of the hip and lower extremities, using the Barlow and Ortolani procedures, and ultrasonography. The Barlow examination is performed by adducting a flexed hip with gentle posterior force to identify a dislocatable

hip. The Ortolani examination is performed by abducting a flexed hip with gentle anterior force to relocate a dislocated hip. Data assessing the relative value of limited hip abduction as a screening tool are sparse and suggest the test is of little value in early infancy and is of somewhat greater value as infants age.

- Treatments for DDH include both nonsurgical and surgical options. Nonsurgical treatment with abduction devices is used in early treatment and includes the commonly prescribed Pavlik method. Surgical intervention is used when DDH is severe or diagnosed late or after an unsuccessful trial of nonsurgical treatments. Evidence of the effectiveness of interventions is inconclusive because of a high rate of spontaneous resolution, absence of comparative studies of intervention versus nonintervention groups, and variations in surgical indications and protocols. Avascular necrosis of the hip is the most common and most severe potential harm of both surgical and nonsurgical interventions and can result in growth arrest of the hip and eventual joint destruction with significant disability.

This USPSTF recommendation was first published in: *Pediatrics.* 2006; 117:898-902.

Screening of Infants for Hyperbilirubinemia to Prevent Chronic Bilirubin Encephalopathy

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) concludes that the evidence is insufficient to recommend screening infants for hyperbilirubinemia to prevent chronic bilirubin encephalopathy. *Grade: I Statement*.

Clinical Considerations

- Potential preventable burden: Severe neonatal hyperbilirubinemia is associated with kernicterus, the yellow staining of specific areas of brain tissue in the neonate caused by accumulation of unconjugated bilirubin. Chronic bilirubin encephalopathy describes the clinical neurologic sequelae associated with severe hyperbilirubinemia, including choreoathetoid cerebral palsy, sensorineural hearing loss, gaze paresis, and intellectual deficits. However, hyperbilirubinemia alone is not sufficient to account for these neurologic findings. Infants with extremely high levels of serum bilirubin but no apparent sequelae have been reported, and infants without documented high serum levels of bilirubin have been found to have kernicterus. While U.S. figures are not available, incidence of bilirubin encephalopathy in the U.K. is estimated at 0.9 in 100,000 live births.

- Potential harms: Potential harms caused by interference with breastfeeding, disruption of maternal-infant bonding, pain caused by heel stick or venipuncture, weight loss, gastrointestinal problems, possible growth of melanocytic nevi, and labeling of infants that have elevated bilirubin levels are unmeasured but may be important.
- Costs: The monetary cost to provide universal screening would be very large, particularly if serum or transcutaneous bilirubin (TcB) measurement is adopted as a universal screening tool.
- Current practice: Universal screening with a variety of methods is widespread in the United States.
- This recommendation statement addresses screening for hyperbilirubinemia to reduce the incidence of chronic bilirubin encephalopathy in healthy term or near-term infants (≥ 35 weeks' gestational age).
- Risk factors for hyperbilirubinemia include exclusive breastfeeding, family history of neonatal jaundice, bruising, cephalohematoma, ethnicity (Asian, black), maternal age (> 25 years), male gender, glucose-6-phosphate dehydrogenase deficiency, and gestational age of < 38 weeks. The contribution of these risk factors to chronic bilirubin encephalopathy in otherwise healthy children is not well understood.
- Screening for hyperbilirubinemia may consist of risk-factor assessment, measurement of bilirubin level (either in serum or by transcutaneous estimation), or a combination of methods.

■ Phototherapy is commonly used to treat hyperbilirubinemia. A previous systematic review reported that one needs to treat 6 to 10 otherwise healthy jaundiced neonates with total serum bilirubin (TSB) levels of ≥15 mg/dL with phototherapy to prevent the TSB level in 1 additional infant from rising above 20 mg/dL.

Exchange transfusion is used to treat extreme hyperbilirubinemia. Although death as a complication of exchange transfusion is rare, significant morbidity (apnea, bradycardia, cyanosis, vasospasm, thrombosis, or necrotizing enterocolitis occurs in as any as 5% of exchange transfusions, and the risks associated with the use of blood products must always be considered. Hypoxic-ischemic encephalopathy and AIDS have occurred in otherwise healthy infants receiving exchange transfusions.

This USPSTF recommendation was first published in: *Pediatrics.* 2009; 124:1172-1177.

Screening for Idiopathic Scoliosis in Adolescents

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends against the routine screening of asymptomatic adolescents for idiopathic scoliosis. *Grade: D Recommendation.*

Clinical Considerations

- Screening adolescents for idiopathic scoliosis is usually done by visual inspection of the spine to look for asymmetry of the shoulders, scapulae, and hips. A scoliometer can be used to measure the curve. If idiopathic scoliosis is suspected, radiography can be used to confirm the diagnosis and to quantify the degree of curvature.
- The health outcomes of adolescents with idiopathic scoliosis differ from those of adolescents with secondary scoliosis (i.e., congenital, neuromuscular, or early onset idiopathic scoliosis). Idiopathic scoliosis with onset in adolescence may have a milder clinical course.
- Conservative interventions to treat curves detected through screening include spinal orthoses (braces) and exercise therapy, but they may not significantly improve back pain or the quality of life for adolescents diagnosed with idiopathic scoliosis.

- The potential harms of screening and treating adolescents for idiopathic scoliosis include unnecessary follow-up visits and evaluations due to false positive test results and psychological adverse effects, especially related to brace wear. Although routine screening of adolescents for idiopathic scoliosis is not recommended, clinicians should be prepared to evaluate idiopathic scoliosis when it is discovered incidentally or when the adolescent or parent expresses concern about scoliosis.

This USPSTF recommendation was first published by: Agency for Healthcare Research and Quality, Rockville, MD. June 2004. http://www.USPreventiveServicesTask Force.org.

Screening for Lipid Disorders in Children

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) concludes that the evidence is insufficient to recommend for or against routine screening for lipid disorders in infants, children, adolescents, or young adults (up to age 20). *Grade: I Statement.*

Clinical Considerations

- Dyslipidemias are abnormalities of lipoprotein metabolism and include elevations in TC, LDL-C, or triglycerides or deficiencies of HDL-C. These disorders can be acquired or familial; monogenic dyslipidemias are related to genetic conditions such as familial hypercholesterolemia in some individuals. Multifactorial dyslipidemias are due to risk factors including environmental factors (obesity, diet) or currently unidentified genetic factors. This recommendation applies to all asymptomatic individuals from birth to age 20.
- Because normal lipid levels have been strongly associated with the risk of coronary heart disease (CHD) events in adulthood, and early identification and lipid-lowering intervention in certain populations of adults can prevent CHD events, much attention has been directed at screening individuals for dyslipidemia at young ages

(e.g., childhood). Among children and adolescents, 3 groups may be identified through screening:

1. Children with undiagnosed monogenic dyslipidemias such as familial hypercholesterolemia.
2. Those with undiagnosed secondary causes of dyslipidemia.
3. Those with multi-factorial dyslipidemia (polygenetic or related to risk-factors).

However, the clinical health benefits shown in adults identified and treated for dyslipidemia have not been studied in children, making the role of screening children uncertain.

- Children and adolescents with diabetes may be at especially high risk for dyslipidemia and cardiovascular events. Screening children and adolescents with diabetes for dyslipidemia has been recommended by other groups as a part of appropriate care for these children.
- The use of family history as a screening tool for dyslipidemia has variable accuracy largely because definitions of a positive family history and lipid threshold values vary substantially. Screening using family history as defined by the National Cholesterol Education Program (NCEP) and the American Academy of Pediatrics (AAP) has been shown to have high rates of false negative results.

- If clinicians choose to screen for dyslipidemia, the preferred screening tests are TC and HDL-C on nonfasting or fasting samples; calculating LDL-C requires fasting samples.

This USPSTF recommendation was first published in: *Pediatrics.* 2007; 120:e215-e219.

Screening and Treatment for Major Depressive Disorder in Children and Adolescents

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends screening of adolescents (12-18 years of age) for major depressive disorder (MDD) when systems are in place to ensure accurate diagnosis, psychotherapy (cognitive-behavioral or interpersonal), and follow-up. *Grade: B Recommendation.*

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening of children (7-11 years of age). *Grade: I Statement.*

Clinical Considerations

- This USPSTF recommendation addresses screening for MDD in adolescents (12-18 years of age) and children (7-11 years of age) in the general population. There is a spectrum of depressive disorders. This report focuses only on screening for MDD and does not address screening for various less-severe depressive disorders.
- A variety of factors contribute to the development of MDD. Most people who develop MDD have multiple risk factors. However, risk factors for MDD can be difficult to assess. As a result, researchers have focused on identifying youth

subgroups at increased risk of developing MDD. Important risk factors that can be assessed relatively accurately and reliably include parental depression, having comorbid mental health or chronic medical conditions, and having experienced a major negative life event.

- Instruments developed for primary care (Patient Health Questionnaire for Adolescents [PHQ-A] and the Beck Depression Inventory-Primary Care Version [BDI-PC]) have been used successfully in adolescents. There are limited data describing the accuracy of using MDD screening instruments in younger children (7-11 years of age).
- Among pharmacotherapies available for the treatment of MDD in children and adolescents, SSRIs have been found to be efficacious. Treating depressed youth with SSRIs is associated with an increased risk of suicidality and, therefore, should only be considered if judicious clinical monitoring is possible. Psychotherapy trials indicate that a variety of psychotherapy types are efficacious among adolescents (including cognitive-behavioral and interpersonal therapies). Harms of psychotherapy are felt to be small.

This USPSTF recommendation was first published in: *Pediatrics.* 2009; 123:1223–1228

Universal Screening for Hearing Loss in Newborns

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends screening for hearing loss in all newborn infants. *Grade: B Recommendation.*

Clinical Considerations

- The patient population considered here includes all newborn infants.
- Risk factors associated with a higher incidence of permanent bilateral congenital hearing loss include NICU admission for ≥2 days, several congenital syndromes, family history of hereditary childhood sensorineural hearing loss, craniofacial abnormalities, and certain congenital infections. However, ~50% of infants with permanent bilateral congenital hearing loss do not have any known risk factors.
- Screening programs should be conducted by using a 1- or 2-step validated protocol. A frequently used protocol requires a 2-step screening process, which includes otoacoustic emissions (OAEs) followed by auditory brainstem response (ABR) in those who failed the first test. Equipment should be well maintained, staff should be thoroughly trained, and quality-control programs should be in place to reduce avoidable false-positive test results. Programs should develop protocols to ensure that infants with positive screening-test results receive appropriate

audiologic evaluation and follow-up after discharge. Newborns delivered at home, birthing centers, or hospitals without hearing screening facilities should have some mechanism for referral for newborn hearing screening, including tracking of follow-up.

- Early intervention services for hearing-impaired infants should be designed to meet the individualized needs of the infant and family, including acquisition of communication competence, social skills, emotional well-being, and positive self-esteem. Early intervention includes evaluation for amplification or sensory devices, surgical and medical evaluation, and communication assessment and therapy. In recent years, cochlear implants have become more available for appropriate candidates; this surgery is usually considered in those with severe-to-profound hearing loss only after inadequate response to hearing aids.
- All infants should have hearing screening before 1 month of age. Those infants who do not pass the newborn screening should undergo audiologic and medical evaluation before 3 months of age for confirmatory testing. Because of the elevated risk of hearing loss in infants with risk indicators, an expert panel made a recommendation in 2000 that these children should undergo periodic monitoring for 3 years.

This USPSTF recommendation was first published in: *Pediatrics.* 2008; 122:143–148.

Screening for Obesity in Children and Adolescents

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends that clinicians screen children aged 6 years and older for obesity and offer them or refer them to comprehensive, intensive behavioral interventions to promote improvement in weight status. *Grade: B Recommendation.*

Clinical Considerations

- This recommendation statement applies to children and adolescents aged 6 to 18 years. The USPSTF is using the following terms to define categories of increased BMI: overweight is defined as an age- and gender-specific BMI between the 85th and 95th percentiles, and obesity is defined as an age- and gender-specific BMI at ≥95th percentile. The USPSTF did not find sufficient evidence for screening children younger than 6 years.
- In 2005, the USPSTF found adequate evidence that BMI was an acceptable measure for identifying children and adolescents with excess weight. BMI is calculated from the measured weight and height of an individual.
- The USPSTF found that effective comprehensive weight-management programs incorporated counseling and other interventions that targeted diet and physical activity. Interventions also

included behavioral management techniques to assist in behavior change. Interventions that focused on younger children incorporated parental involvement as a component.

Moderate- to high-intensity programs involved >25 hours of contact with the child and/or the family over a 6-month period and showed results including improved weight status, defined as an absolute and/or relative decrease in the BMI 12 months after the beginning of the intervention. Most participants were obese, and it is not known whether these results can be applied to children who are overweight but not obese. In addition, evidence was limited on the long-term sustainability of BMI changes achieved through behavioral interventions and on the trajectory of weight gain in children and adolescents. Interventions generally took place in referral settings, and the results can only be generalized to children who follow through on treatment. Low-intensity interventions, defined as ≤25 contact hours over a 6-month period, did not result in significant improvement in weight status.

Interventions that combined pharmacologic agents (sibutramine or orlistat) with behavioral interventions resulted in modest short-term improvement in weight status in children aged 12 years and older. There were no long-term data on the maintenance of improvement after discontinuation of medications. The magnitude of the harms of these drugs in children could not be estimated with certainty. Adverse effects included

elevated heart rate, elevated blood pressure, and adverse gastrointestinal effects. Sibutramine, a centrally acting appetite suppressant, has been approved by the US Food and Drug Administration (FDA) for use in adolescents aged 16 years and older. Orlistat, a lipase inhibitor, has been approved by the FDA for use in adolescents aged 12 years and older. Neither sibutramine nor orlistat has been approved for use in pediatric populations younger than 12 years.

- No evidence was found regarding appropriate intervals for screening. Height and weight, from which BMI is calculated, are routinely measured during health maintenance visits.

This USPSTF recommendation was first published in: *Pediatrics.* 2010; 125:361-367.

Screening for Phenylketonuria

Summary of Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends screening for phenylketonuria (PKU) in newborns. *Grade: A Recommendation.*

Clinical Considerations

- This recommendation applies to newborns.
- Screening for PKU is mandated in all 50 states, though methods of screening vary. There are three principal methods used for PKU screening in the United States: the Guthrie Bacterial Inhibition Assay (BIA), automated fluorometric assay, and tandem mass spectrometry. Screening tests are most accurate if performed after 24 hours of life but before the infant is 7 days old.
- It is essential that phenylalanine restrictions be instituted shortly after birth to prevent the neurodevelopmental effects of PKU.
- Infants who are tested within the first 24 hours after birth should receive a repeat screening test by 2 weeks of age. Premature infants and those with illnesses should be tested at or near 7 days of age, but in all cases before newborn nursery discharge.

This USPSTF recommendation was first published in: *Ann Fam Med.* 2008; 6(2):166.

Screening for Sickle Cell Disease in Newborns

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends screening for sickle cell disease in newborns. *Grade: A Recommendation.*

Clinical Considerations

- Screening for sickle cell disease in newborns is mandated in all 50 States and the District of Columbia. Most States use either thin-layer isoelectric focusing (IEF) or high performance liquid chromatography (HPLC) as the initial screening test. Both methods have extremely high sensitivity and specificity for sickle cell anemia. Specimens must be drawn prior to any blood transfusion due to the potential for a false negative result as a result of the transfusion. Extremely premature infants may have false positive results when adult hemoglobin is undetectable.
- All newborns should undergo testing regardless of birth setting. In general, birth attendants should make arrangements for samples to be obtained, and the first physician to see the child at an office visit should verify screening results. Confirmatory testing should occur no later than 2 months of age.

- Children with sickle cell anemia should begin prophylactic penicillin by 2 months of age and receive pneumococcal immunizations at recommended intervals.

This USPSTF recommendation was first published by: Agency for Healthcare Research and Quality, Rockville, MD. September 2007. http://www.USPreventiveServicesTaskForce.org.

Screening for Speech and Language Delay in Preschool Children

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) concludes that the evidence is insufficient to recommend for or against routine use of brief, formal screening instruments in primary care to detect speech and language delay in children up to 5 years of age. *Grade: I Statement.*

Clinical Considerations

- It is the responsibility of primary care clinicians to seek and address parents' concerns and children's obvious speech and language delays despite the lack of evidence to support screening with brief formal instruments. Speech and language development is considered a useful early indicator of a child's overall development and cognitive ability, and clinical and parental concerns are important modes of identifying children with speech and language delay. Early identification of children with developmental delay (lateness in achieving milestones) or developmental disabilities (chronic conditions that result from mental or physical impairments), such as marked hearing deficits, may lead to intervention and family assistance at a young age when chances for improvement may be best.

- Specific groups of children who already have been identified as at higher than average risk for speech and language delay, including children with other medical problems such as hearing deficits or craniofacial abnormalities, are not considered in this recommendation. The results of studies of other risk factors are inconsistent, so the USPSTF was unable to develop a list of specific risk factors to guide primary care providers in selective screening. The most consistently reported risk factors, however, include a family history of speech and language delay, male gender, and perinatal factors, such as prematurity and low birth-weight. Other risk factors reported less consistently include levels of parental education, specific childhood illnesses, birth order, and larger family size.

This USPSTF recommendation was first published in: *Pediatrics.* 2006; 117(2):497-501.

Counseling to Prevent Tobacco Use and Tobacco-Caused Disease

NOTE: An update to this recommendation is in progress. Please visit our Web site at http://www.USPreventiveServicesTaskForce.org or the USPSTF's Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov for the most current recommendation.

Summary of Recommendations

The USPSTF concludes that the evidence is insufficient to recommend for or against routine screening for tobacco use or interventions to prevent and treat tobacco use and dependence among children or adolescents. *Grade: I Statement.*

Clinical Considerations

- There is little evidence addressing the effectiveness of screening and counseling children or adolescents to prevent the initiation of tobacco use and to promote its cessation in a primary care setting, but clinicians may use their discretion in conducting tobacco-related discussions with this population, since the majority of adult smokers begin tobacco use as children or adolescents.

This USPSTF recommendation was first published by: Agency for Healthcare Research and Quality, Rockville, MD. November 2003. http://www.USPreventiveServicesTaskForce.org.

Screening for Visual Impairment in Children Younger Than Age 5 Years

NOTE: An update to this recommendation is in progress. Please visit the USPSTF Web site at http://www.USPreventiveServicesTaskForce.org or the Electronic Preventive Services Selector (ePSS) at http://epss.ahrq.gov for the most current recommendation.

Summary of Recommendation

The U.S. Preventive Services Task Force (USPSTF) recommends screening to detect amblyopia, strabismus, and defects in visual acuity in children younger than age 5 years. *Grade: B Recommendation.*

Clinical Considerations

- The most common causes of visual impairment in children are: (1) amblyopia and its risk factors and (2) refractive error not associated with amblyopia. Amblyopia refers to reduced visual acuity without a detectable organic lesion of the eye and is usually associated with amblyogenic risk factors that interfere with normal binocular vision, such as strabismus (ocular misalignment), anisometropia (a large difference in refractive power between the 2 eyes), cataract (lens opacity), and ptosis (eyelid drooping). Refractive error not associated with amblyopia principally includes myopia (nearsightedness) and hyperopia (farsightedness);

both remain correctable regardless of the age at detection.

- Various tests are used widely in the United States to identify visual defects in children, and the choice of tests is influenced by the child's age. During the first year of life, strabismus can be assessed by the cover test and the Hirschberg light reflex test. Screening children younger than age 3 years for visual acuity is more challenging than screening older children and typically requires testing by specially trained personnel. Newer automated techniques can be used to test these children. Photoscreening can detect amblyogenic risk factors such as strabismus, significant refractive error, and media opacities; however, photoscreening cannot detect amblyopia.
- Traditional vision testing requires a cooperative, verbal child and cannot be performed reliably until ages 3 to 4 years. In children older than age 3 years, stereopsis (the ability of both eyes to function together) can be assessed with the Random Dot E test or Titmus Fly Stereotest; visual acuity can be assessed by tests such as the HOTV chart, Lea symbols, or the tumbling E. Some of these tests have better test characteristics than others.
- Based on their review of current evidence, the USPSTF was unable to determine the optimal screening tests, periodicity of screening, or technical proficiency required of the screening clinician. Based on expert opinion, the American Academy of

Pediatrics (AAP) recommends the following vision screening be performed at all well-child visits for children starting in the newborn period to 3 years: ocular history, vision assessment, external inspection of the eyes and lids, ocular motility assessment, pupil examination, and red reflex examination. For children aged 3 to 5 years, the AAP recommends the aforementioned screening in addition to age-appropriate visual acuity measurement (using HOTV or tumbling E tests) and ophthalmoscopy.

- The USPSTF found that early detection and treatment of amblyopia and amblyogenic risk factors can improve visual acuity. These treatments include surgery for strabismus and cataracts; use of glasses, contact lenses, or refractive surgery treatments to correct refractive error; and visual training, patching, or atropine therapy of the nonamblyopic eye to treat amblyopia.
- These recommendations do not address screening for other anatomic or pathologic entities, such as macro cornea, cataracts, retinal abnormalities, or neonatal neuroblastoma, nor do they address newer screening technologies currently under investigation.

This USPSTF recommendation was first published in: *Ann Fam Med.* 2004; 2:263-266.

Appendixes and Index

Appendix A

How the U.S. Preventive Services Task Force Grades Its Recommendations

The U.S. Preventive Services Task Force (USPSTF) assigns one of five letter grades to each of its recommendations (A, B, C, D, or I). The USPSTF changed its grade definitions based on a change in methods in May 2007.

Grade Definitions After May 2007

What the Grades Mean and Suggestions for Practice

The USPSTF updated its definitions of the grades it assigns to recommendations and now includes "suggestions for practice" associated with each grade. The USPSTF has also defined levels of certainty regarding net benefit. These definitions apply to USPSTF recommendations voted on after May 2007.

Grade	Definition	Suggestions for Practice
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer or provide this service.

continued

Grade	Definition	Suggestions for Practice
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 or provide this service.
C	The USPSTF recommends against routinely providing the service. There may be considerations that support providing the service in an individual patient. There is at least moderate certainty that the net benefit is small.	Offer or provide this service only if other considerations support the 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 USPSTF Recommendation Statement. If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

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. • 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.

continued

Level of Certainty*	Description
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 not generalizable to routine primary care practice. • Lack of information on important health outcomes. More information may allow 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 based on the nature of the overall evidence available to assess the net benefit of a preventive service.

Grade Definitions Prior to May 2007

The definitions below (of USPSTF grades and quality of evidence ratings) were in use prior to the update in methods and apply to recommendations voted on by the USPSTF prior to May 2007.

A **Strongly Recommended:** The USPSTF strongly recommends that clinicians provide [the service] to eligible patients. *The USPSTF found good evidence that [the service] improves important health outcomes and concludes that benefits substantially outweigh harms.*

B **Recommended:** The USPSTF recommends that clinicians provide [the service] to eligible patients. *The USPSTF found at least fair evidence that [the service] improves important health outcomes and concludes that benefits outweigh harms.*

C **No Recommendation:** The USPSTF makes no recommendation for or against routine provision of [the service]. *The USPSTF found at least fair evidence that [the service] can improve health outcomes but concludes that the balance of benefits and harms is too close to justify a general recommendation.*

D **Not Recommended:** The USPSTF recommends against routinely providing [the service] to asymptomatic patients. *The USPSTF found at least fair evidence that [the service] is ineffective or that harms outweigh benefits.*

I **Insufficient Evidence to Make a Recommendation:** The USPSTF concludes that the evidence is insufficient to recommend for or against routinely providing [the service]. *Evidence that [the service] is effective is lacking, of poor quality, or conflicting and the balance of benefits and harms cannot be determined.*

Quality of Evidence (for recommendations prior to May 2007)

The USPSTF grades the quality of the overall evidence for a service on a 3-point scale (good, fair, poor):

Good: Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes.

Fair: Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies, generalizability to routine practice, or indirect nature of the evidence on health outcomes.

Poor: Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes.

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- AARP
- National Committee for Quality Assurance (NCQA)

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- Centers for Medicare & Medicaid Services (CMS)
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- National Institutes of Health (NIH)
- Veteran's Health Administration (VHA)
- Department of Defense/Military Health System (DoD/MHS)
- Office of Disease Prevention and Health Promotion (ODPHP)
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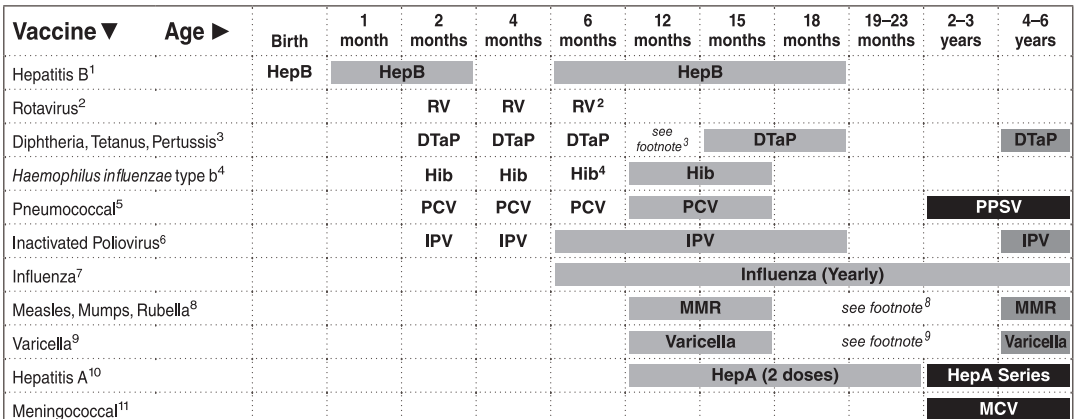
Appendix D

Advisory Committee on Immunization Practices Recommended Immunization Schedules

The USPSTF recognizes the importance of immunizations in primary disease prevention. The Task Force refers to recommendations made by the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices (ACIP) for immunization of children and adults. The methods used by ACIP to review evidence on immunizations may differ from the methods used by the USPSTF.

Recommended Immunization Schedule for Persons Aged 0 Through 6 Years—United States • 2010

For those who fall behind or start late, see the catch-up schedule



Footnotes begin on page 252.

This schedule includes recommendations in effect as of December 15, 2009. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Considerations should include provider assessment, patient preference, and the potential for adverse events. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations: **http://www.cdc.gov/vaccines/pubs/acip-list.htm**. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS) at **http://www.vaers.hhs.gov** or by telephone, **800-822-7967**.

Footnotes

1. Hepatitis B vaccine (HepB). (Minimum age: birth)

At birth:

- Administer monovalent HepB to all newborns before hospital discharge.
- If mother is hepatitis B surface antigen (HBsAg)-positive, administer HepB and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth.
- If mother's HBsAg status is unknown, administer HepB within 12 hours of birth. Determine mother's HBsAg status as soon as possible and, if HBsAg-positive, administer HBIG (no later than age 1 week).

After the birth dose:

- The HepB series should be completed with either monovalent HepB or a combination vaccine containing HepB. The second dose should be administered at age 1 or 2 months. Monovalent HepB vaccine should be used for doses administered before age 6 weeks. The final dose should be administered no earlier than age 24 weeks.
- Infants born to HBsAg-positive mothers should be tested for HBsAg and antibody to HBsAg 1 to 2 months after completion of at least 3 doses of the HepB series, at age 9 through 18 months (generally at the next well-child visit).
- Administration of 4 doses of HepB to infants is permissible when a combination vaccine containing HepB is administered after the birth dose. The fourth dose should be administered no earlier than age 24 weeks.

2. Rotavirus vaccine (RV). (Minimum age: 6 weeks)

- Administer the first dose at age 6 through 14 weeks (maximum age: 14 weeks 6 days). Vaccination should not be initiated for infants aged 15 weeks 0 days or older.
- The maximum age for the final dose in the series is 8 months 0 days
- If Rotarix® is administered at ages 2 and 4 months, a dose at 6 months is not indicated.

3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP). (Minimum age: 6 weeks)

- The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose.
- Administer the final dose in the series at age 4 through 6 years.

4. *Haemophilus influenzae* type b conjugate vaccine (Hib). (Minimum age: 6 weeks)

- If PRP-OMP (PedvaxHIB® or Comvax® [HepB-Hib]) is administered at ages 2 and 4 months, a dose at age 6 months is not indicated.
- TriHiBit® (DTaP/Hib) and Hiberix® (PRP-T) should not be used for doses at ages 2, 4, or 6 months for the primary series but can be used as the final dose in children aged 12 months through 4 years.

5. Pneumococcal vaccine. (Minimum age: 6 weeks for pneumococcal conjugate vaccine [PCV]; 2 years for pneumococcal polysaccharide vaccine [PPSV])

- PCV is recommended for all children aged younger than 5 years. Administer 1 dose of PCV to all healthy children aged 24 through 59 months who are not completely vaccinated for their age.
- Administer PPSV 2 or more months after last dose of PCV to children aged 2 years or older with certain underlying medical conditions, including a cochlear implant. See *MMWR* 1997;46(No. RR-8).

6. Inactivated poliovirus vaccine (IPV) (Minimum age: 6 weeks)

- The final dose in the series should be administered on or after the fourth birthday and at least 6 months following the previous dose.
- If 4 doses are administered prior to age 4 years a fifth dose should be administered at age 4 through 6 years. See *MMWR* 2009;58(30):829–30.

7. Influenza vaccine (seasonal). (Minimum age: 6 months for trivalent inactivated influenza vaccine [TIV]; 2 years for live, attenuated influenza vaccine [LAIV])

- Administer annually to children aged 6 months through 18 years.
- For healthy children aged 2 through 6 years (i.e., those who do not have underlying medical conditions that predispose them to influenza complications), either LAIV or TIV may be used, except LAIV should not be given to children aged 2 through 4 years who have had wheezing in the past 12 months.
- Children receiving TIV should receive 0.25 mL if aged 6 through 35 months or 0.5 mL if aged 3 years or older.
- Administer 2 doses (separated by at least 4 weeks) to children aged younger than 9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time during the previous influenza season but only received 1 dose.
- For recommendations for use of influenza A (H1N1) 2009 monovalent vaccine see *MMWR* 2009;58(No. RR-10).

8. Measles, mumps, and rubella vaccine (MMR). (Minimum age: 12 months)

- Administer the second dose routinely at age 4 through 6 years. However, the second dose may be administered before age 4, provided at least 28 days have elapsed since the first dose.

9. Varicella vaccine. (Minimum age: 12 months)

- Administer the second dose routinely at age 4 through 6 years. However, the second dose may be administered before age 4, provided at least 3 months have elapsed since the first dose.
- For children aged 12 months through 12 years the minimum interval between doses is 3 months. However, if the second dose was administered at least 28 days after the first dose, it can be accepted as valid.

10. Hepatitis A vaccine (HepA). (Minimum age: 12 months)

- Administer to all children aged 1 year (i.e., aged 12 through 23 months). Administer 2 doses at least 6 months apart.
- Children not fully vaccinated by age 2 years can be vaccinated at subsequent visits
- HepA also is recommended for older children who live in areas where vaccination programs target older children, who are at increased risk for infection, or for whom immunity against hepatitis A is desired.

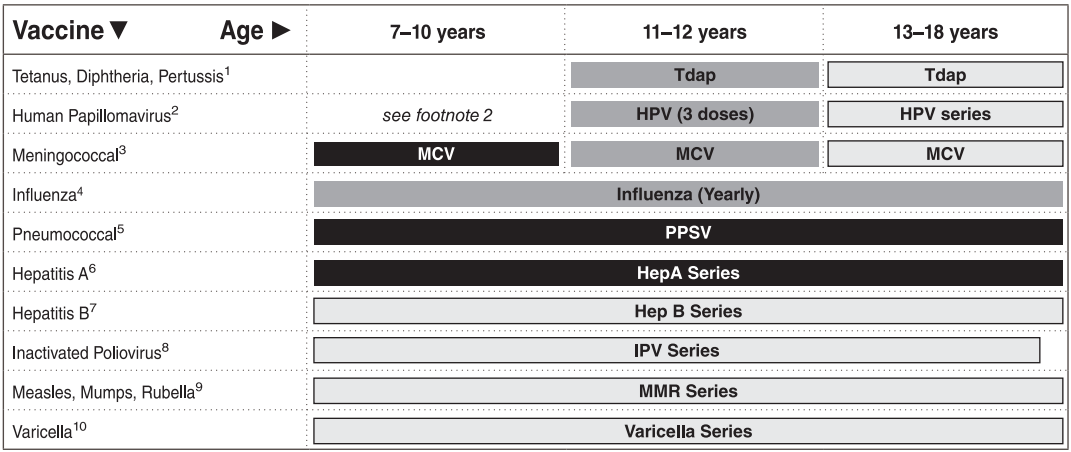
11. Meningococcal vaccine. (Minimum age: 2 years for meningococcal conjugate vaccine [MCV4] and for meningococcal polysaccharide vaccine [MPSV4])

- Administer MCV4 to children aged 2 through 10 years with persistent complement component deficiency, anatomic or functional asplenia, and certain other conditions placing tham at high risk.
- Administer MCV4 to children previously vaccinated with MCV4 or MPSV4 after 3 years if first dose administered at age 2 through 6 years. See *MMWR* 2009; 58:1042–3.

The Recommended Immunization Schedules for Persons Aged 0 through 18 Years are approved by the Advisory Committee on Immunization Practices (http://www.cdc.gov/vaccines/recs/acip), the American Academy of Pediatrics (http://www.aap.org), and the American Academy of Family Physicians (http://www.aafp.org).

Recommended Immunization Schedule for Persons Aged 7 Through 18 Years—United States • 2010

For those who fall behind or start late, see the schedule below and the catch-up schedule



Footnotes begin on page 258.

This schedule includes recommendations in effect as of December 15, 2009. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Considerations should include provider assessment, patient preference, and the potential for adverse events. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations: **http://www.cdc.gov/vaccines/pubs/acip-list.htm**. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS) at **http://www.vaers.hhs.gov** or by telephone, **800-822-7967**.

Footnotes

1. Tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap). (Minimum age: 10 years for Boostrix® and 11 years for Adacel®)

- Administer at age 11 or 12 years for those who have completed the recommended childhood DTP/DTaP vaccination series and have not received a tetanus and diphtheria toxoid (Td) booster dose.
- Persons aged 13 through 18 years who have not received Tdap should receive a dose.
- A 5-year interval from the last Td dose is encouraged when Tdap is used as a booster dose; however, a shorter interval may be used if pertussis immunity is needed.

2. Human papillomavirus vaccine (HPV). (Minimum age: 9 years)

- Two HPV vaccines are licensed: a quadrivalent vaccine (HPV4) for the prevention of cervical, vaginal and vulvar cancers (in females) and genital warts (in females and males), and a bivalent vaccine (HPV2) for the prevention of cervical cancers in females.
- HPV vaccines are most effective for both males and females when given before exposure to HPV through sexual contact.
- HPV4 or HPV2 is recommended for the prevention of cervical precancers and cancers in females.
- HPV4 is recommended for the prevention of cervical, vaginal and vulvar precancers and cancers and genital warts in females.
- Administer the first dose to females at age 11 or 12 years.
- Administer the second dose 1 to 2 months after the first dose and the third dose 6 months after the first dose (at least 24 weeks after the first dose).
- Administer the series to females at age 13 through 18 years if not previously vaccinated.
- HPV4 may be administered in a 3-dose series to males aged 9 through 18 years to reduce their likelihood of acquiring genital warts.

3. Meningococcal conjugate vaccine (MCV4).

- Administer at age 11 or 12 years, or at age 13 through 18 years if not previously vaccinated.
- Administer to previously unvaccinated college freshmen living in a dormitory.
- Administer MCV4 to children aged 2 through 10 years with persistent complement component deficiency, anatomic or functional asplenia, or certain other conditions placing them at high risk.
- Administer to children previously vaccinated with MCV4 or MPSV4 who remain at increased risk after 3 years (if first dose administered at age 2 through 6 years) or after 5 years (if first dose administered at age 7 years or older). Persons whose only risk factor is living in on-campus housing are not recommended to receive an additional dose. See *MMWR* 2009;58:1042–3.

4. Influenza vaccine (seasonal).

- Administer annually to children aged 6 months through 18 years.
- For healthy nonpregnant persons aged 7 through 18 years (i.e., those who do not have underlying medical conditions that predispose them to influenza complications), either LAIV or TIV may be used.
- Administer 2 doses (separated by at least 4 weeks) to children aged younger than 9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time during the previous influenza season but only received 1 dose.
- For recommendations for use of influenza A (H1N1) 2009 monovalent vaccine. See *MMWR* 2009;58(No. RR-10).

5. Pneumococcal polysaccharide vaccine (PPSV).

- Administer to children with certain underlying medical conditions, including a cochlear implant. A single revaccination should be administered after 5 years to children with functional or anatomic asplenia or an immunocompromising condition. See *MMWR* 1997;46(No. RR-8).

6. Hepatitis A vaccine (HepA).

- Administer 2 doses at least 6 months apart.
- HepA is recommended for children aged older than 23 months who live in areas where vaccination programs target older children, who are at increased risk for infection, or for whom immunity against hepatitis A is desired.

7. Hepatitis B vaccine (HepB).

- Administer the 3-dose series to those not previously vaccinated.
- A 2-dose series (separated by at least 4 months) of adult formulation Recombivax HB is licensed for children aged 11 through 15 years.

8. Inactivated poliovirus vaccine (IPV).

- The final dose in the series should be administered on or after the fourth birthday and at least 6 months following the previous dose.
- If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child's current age.

9. Measles, mumps, and rubella vaccine (MMR).

- If not previously vaccinated, administer 2 doses or the second dose for those who have received only 1 dose, with at least 28 days between doses.

10. Varicella vaccine.

- For persons aged 7 through 18 years without evidence of immunity (see *MMWR* 2007;56[No. RR-4]), administer 2 doses if not previously vaccinated or the second dose if only 1 dose has been administered.
- For persons aged 7 through 12 years, the minimum interval between doses is 3 months. However, if the second dose was administered at least 28 days after the first dose, it can be accepted as valid.
- For persons aged 13 years and older, the minimum interval between doses is 28 days.

Catch-up Immunization Schedule for Persons Aged 4 Months Through 18 Years Who Start Late or Who Are More Than 1 Month Behind—United States • 2010

The table below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age.

PERSONS AGED 4 MONTHS THROUGH 6 YEARS					
Vaccine	**Minimum Age for Dose 1**	**Minimum Interval Between Doses**			
		Dose 1 to Dose 2	**Dose 2 to Dose 3**	**Dose 3 to Dose 4**	**Dose 4 to Dose 5**
Hepatitis B[1]	Birth	**4 weeks**	**8 weeks** (and at least 16 weeks after first dose)		
Rotavirus[2]	6 wks	**4 weeks**	**4 weeks**[2]		
Diphtheria, Tetanus, Pertussis[3]	6 wks	**4 weeks**	**4 weeks**	**6 months**	**6 months**[3]
***Haemophilus influenzae* type b**[4]	6 wks	**4 weeks** if first dose administered at younger than age 12 months **8 weeks (as final dose)** if first dose administered at age 12–14 months **No further doses needed** if first dose administered at age 15 months or older	**4 weeks**[4] if current age is younger than 12 months **8 weeks (as final dose)**[4] if current age is 12 months or older and first dose administered at younger than age 12 months and second dose administered at younger than 15 months **No further doses needed** if previous dose administered at age 15 months or older	**8 weeks (as final dose)** This dose only necessary for children aged 12 months through 59 months who received 3 doses before age 12 months	
Pneumococcal[5]	6 wks	**4 weeks** if first dose administered at younger than age 12 months **8 weeks (as final dose for healthy children)** if first dose administered at age 12 months or older or current age 24 through 59 months **No further doses needed** for healthy children if first dose administered at age 24 months or older	**4 weeks** if current age is younger than 12 months **8 weeks** **(as final dose for healthy children)** if current age is 12 months or older **No further doses needed** for healthy children if previous dose administered at age 24 months or older	**8 weeks (as final dose)** This dose only necessary for children aged 12 months through 59 months who received 3 doses before age 12 months or for high-risk children who received 3 doses at any age	
Inactivated Poliovirus[6]	6 wks	**4 weeks**	**4 weeks**	**6 months**	
Measles, Mumps, Rubella[7]	12 mos	**4 weeks**			
Varicella[8]	12 mos	**3 months**			
Hepatitis A[9]	12 mos	**6 months**			

Catch-up Immunization Schedule for Persons Aged 4 Months Through 18 Years Who Start Late or Who Are More Than 1 Month Behind—United States • 2010

The table below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age.

		PERSONS AGED 7 THROUGH 18 YEARS			
Tetanus, Diphtheria/ Tetanus, Diphtheria, Pertussis[10]	**7 yrs**[10]	**4 weeks**	**4 weeks** if first dose administered at younger than age 12 months **6 months** if first dose administered at 12 months or older	**6 months** if first dose administered at younger than age 12 months	
Human Papillomavirus[11]	**9 yrs**	**Routine dosing intervals are recommended**[11]			
Hepatitis A[9]	**12 mos**	**6 months**			
Hepatitis B[1]	**Birth**	**4 weeks**	**8 weeks** (and at least 16 weeks after first dose)		
Inactivated Poliovirus[6]	**6 wks**	**4 weeks**	**4 weeks**	**6 months**	
Measles, Mumps, Rubella[7]	**12 mos**	**4 weeks**			
Varicella[8]	**12 mos**	**3 months** if person is younger than age 13 years **4 weeks** if person is aged 13 years or older			

Footnotes begin on page 260.

Footnotes

1. Hepatitis B vaccine (HepB).

- Administer the 3-dose series to those not previously vaccinated.
- A 2-dose series (separated by at least 4 months) of adult formulation Recombivax HB® is licensed for children aged 11 through 15 years.

2. Rotavirus vaccine (RV).

- The maximum age for the first dose is 14 weeks 6 days. Vaccination should not be initiated for infants aged 15 weeks 0 days or older.
- The maximum age for the final dose in the series is 8 months 0 days.
- If Rotarix® was administered for the first and second doses, a third dose is not indicated.

3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP).

- The fifth dose is not necessary if the fourth dose was administered at age 4 years or older.

4. Haemophilus influenzae type b conjugate vaccine (Hib).

- Hib vaccine is not generally recommended for persons aged 5 years or older. No efficacy data are available on which to base a recommendation concerning use of Hib vaccine for older children and adults. However, studies suggest good immunogenicity in persons who have sickle cell disease, leukemia, or HIV infection, or who have had a splenectomy; administering 1 dose of Hib vaccine to these persons who have not previously received Hib vaccine is not contraindicated.
- If the first 2 doses were PRP-OMP (PedvaxHIB® or Comvax®), and administered at age 11 months or younger, the third (and final) dose should be administered at age 12 through 15 months and at least 8 weeks after the second dose.
- If the first dose was administered at age 7 through 11 months, administer the second dose at least 4 weeks later and a final dose at age 12 through 15 months.

5. Pneumococcal vaccine.

- Administer 1 dose of pneumococcal conjugate vaccine (PCV) to all healthy children aged 24 through 59 months who have not received at least 1 dose of PCV on or after age 12 months.
- For children aged 24 through 59 months with underlying medical conditions, administer 1 dose of PCV if 3 doses were received previously or administer 2 doses of PCV at least 8 weeks apart if fewer than 3 doses were received previously.
- Administer pneumococcal polysaccharide vaccine (PPSV) to children aged 2 years or older with certain underlying medical conditions, including a cochlear implant, at least 8 weeks after the last dose of PCV. See *MMWR* 1997;46(No. RR-8).

6. Inactivated poliovirus vaccine (IPV).

- The final dose in the series should be administered on or after the fourth birthday and at least 6 months following the previous dose.
- A fourth dose is not necessary if the third dose was administered at age 4 years or older and at least 6 months following the previous dose.
- In the first 6 months of life, minimum age and minimum intervals are only recommended if the person is at risk for imminent exposure to circulating poliovirus (i.e., travel to a polio-endemic region or during an outbreak).

7. Measles, mumps, and rubella vaccine (MMR).

- Administer the second dose routinely at age 4 through 6 years. However, the second dose may be administered before age 4, provided at least 28 days have elapsed since the first dose.
- If not previously vaccinated, administer 2 doses with at least 28 days between doses.

8. Varicella vaccine.

- Administer the second dose routinely at age 4 through 6 years. However, the second dose may be administered before age 4, provided at least 3 months have elapsed since the first dose.
- For persons aged 12 months through 12 years, the minimum interval between doses is 3 months. However, if the second dose was administered at least 28 days after the first dose, it can be accepted as valid.
- For persons aged 13 years and older, the minimum interval between doses is 28 days.

9. Hepatitis A vaccine (HepA).

- HepA is recommended for children aged older than 23 months who live in areas where vaccination programs target older children, who are at increased risk for infection, or for whom immunity against hepatitis A is desired.

10. Tetanus and diphtheria toxoids vaccine (Td) and tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap).

- Doses of DTaP are counted as part of the Td/Tdap series
- Tdap should be substituted for a single dose of Td in the catch-up series or as a booster for children aged 10 through 18 years; use Td for other doses.

11. Human papillomavirus vaccine (HPV).

- Administer the series to females at age 13 through 18 years if not previously vaccinated.
- Use recommended routine dosing intervals for series catch-up (i.e., the second and third doses should be administered at 1 to 2 and 6 months after the first dose). The minimum interval between the first and second doses is 4 weeks. The minimum interval between the second and third doses is 12 weeks, and the third dose should be administered at least 24 weeks after the first dose.

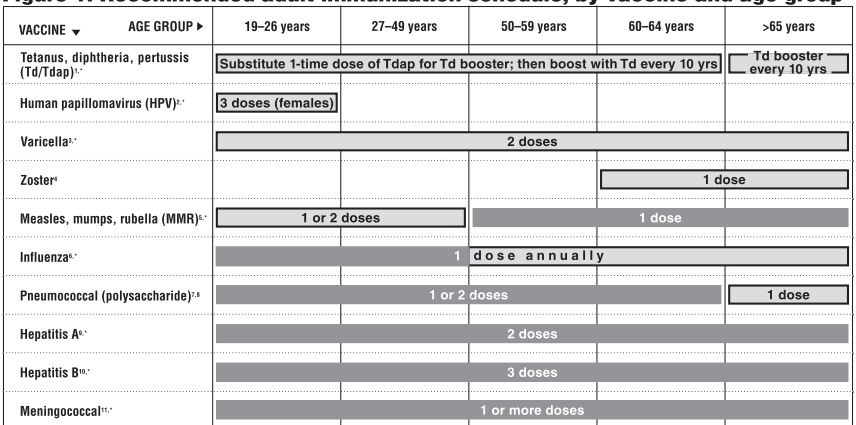
Information about reporting reactions after immunization is available online at **http://www.vaers.hhs.gov** or by telephone, 800-822-7967. Suspected cases of vaccine-preventable diseases should be reported to the state or local health department. Additional information, including precautions and contraindications for immunization, is available from the National Center for Immunization and Respiratory Diseases at **http://www.cdc.gov/vaccines** or telephone, **800-CDC-INFO (800-232-4636)**.

Recommended Adult Immunization Schedule

UNITED STATES · 2010

Note: These recommendations *must* be read with the footnotes that follow containing number of doses, intervals between doses, and other important information.

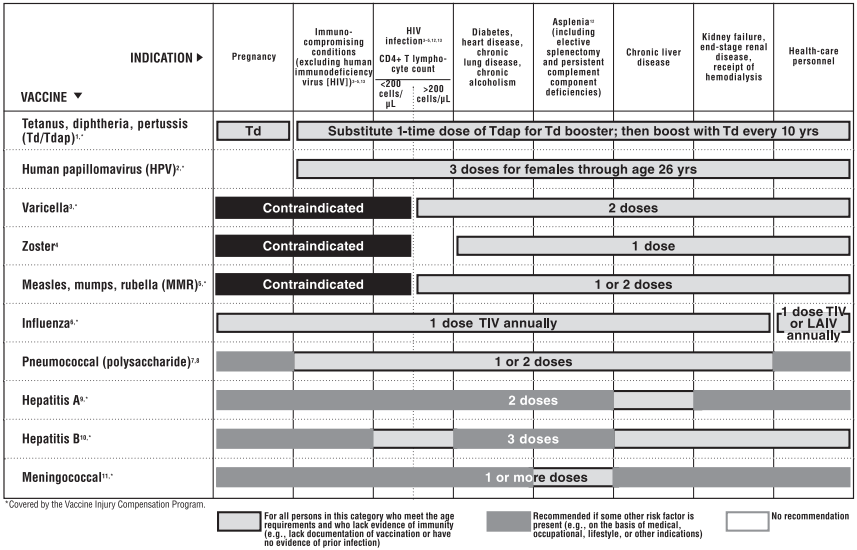
Figure 1. Recommended adult immunization schedule, by vaccine and age group



NOTE: These recommendations must be read along with the footnotes, available at http://www.cdc.gov/vaccines/recs/schedules/adult-schedule.htm.

Information about reporting reactions after immunization is available online at **http://www.vaers.hhs.gov** or by telephone, 800-822-7967. Suspected cases of vaccine-preventable diseases should be reported to the state or local health department. Additional information, including precautions and contraindications for immunization, is available from the National Center for Immunization and Respiratory Diseases at **http://www.cdc.gov/vaccines** or telephone, **800-CDC-INFO (800-232-4636)**.

Figure 2. Vaccines that might be indicated for adults based on medical and other indications



NOTE: These recommendations must be read along with the footnotes, available at http://www.cdc.gov/vaccines/recs/schedules/adult-schedule.htm.

These schedules indicate the recommended age groups and medical indications for which administration of currently licensed vaccines is commonly indicated for adults ages 19 years and older, as of January 1, 2010. Licensed combination vaccines may be used whenever any components of the combination are indicated and when the vaccine's other components are not contraindicated. For detailed recommendations on all vaccines, including those used primarily for travelers or that are issued during the year, consult the manufacturers' package inserts and the complete statements from the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/pubs/acip-list.htm).

The recommendations in this schedule were approved by the Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP), the American Academy of Family Physicians (AAFP), the American College of Obstetricians and Gynecologists (ACOG), and the American College of Physicians (ACP).

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AHRQ's Electronic Preventive Services Selector (ePSS)

Bringing the prevention information clinicians need—recommendations, clinical considerations, and selected practice tools—to the point of care.

The ePSS helps you identify and select screening, counseling, and preventive medication services based on specific patient characteristics.

Available at

http://epss.ahrq.gov/

More Resources on Preventive Services

The AHRQ Prevention and Care Management Program aims to improve delivery of appropriate clinical preventive services. The program disseminates the USPSTF recommendations in multiple formats and facilitates health care delivery systems' implementation of evidence-based preventive services through partnerships, communication, user-driven tools, and outreach. Among the many tools and resources, you will find:

- Brochures on staying healthy and on cardiovascular diseases,
- Fact sheets on cardiovascular diseases,
- Videos on using "I" statements in clinical practice,
- Checklists for staying healthy at age 50+,
- And more, for clinicians, health care systems, and consumers.

For more information, and to view the materials online, go to **http://www.ahrq.gov/clinic/ppipix.htm.**

The Guide to Community Preventive Services provides recommendations on population-based interventions to promote health and prevent disease, injury, disability, and premature death. Recommendations are promulgated by the Task Force on Community Preventive Services, an independent group appointed by the Director of the Centers for Disease Control and Prevention. For information, go to http://www.thecommunityguide.org.

The National Guideline Clearinghouse™ (NGC) is a database of evidence-based clinical practice guidelines and related documents. To access, go to http://www.guideline.gov.

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