Preventive Health Care – Pediatric/Adult – Primary Care
Clinical Practice Guideline

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Release Date: **January 22, 2015**

Next Review Date: **August 2016**
Executive Summary

Guideline Overview
This guideline contains preventive health recommendations for screening, counseling, and education, and interventions in patients ages birth to geriatrics. Specific topics may also include recommendations for patients considered to be high risk or at an increased risk.

Companion Documents & Resources
1. U.S. Preventive Services Task Force (USPSTF)
2. Wisconsin Association for Perinatal Care (WAPC)
4. American Society for Colposcopy and Cervical Pathology Algorithms
5. Centers for Disease Control STEADI (Stopping Elderly Accidents, Deaths & Injuries)
6. Radiologyinfo.org
7. Centers for Disease Control Immunization Schedules

Scope

Disease/Condition(s): Preventable diseases or conditions

Clinical Specialty: Family Medicine, Geriatrics, Internal Medicine, Obstetrics and Gynecology, Pediatrics, Preventive Medicine

Intended Users:
Physicians, Physician Assistants, Advanced Practice Nurses, Registered Nurses, Medical Assistants, Licensed Practical Nurses, Allied Health Personnel, Health Plans/Managed Care Organizations, and other health care providers.

CPG objective(s):
- To provide a comprehensive approach to the provision of preventive services, including, counseling, education, therapeutic interventions (i.e., vaccination) and disease screening for average risk patients from birth through geriatrics
- To assist in the prioritization of screening maneuvers, tests, and counseling opportunities
- To increase the rate of patients who are up to date with preventive services.

Target Population:
All patients from birth to geriatrics who are average risk or asymptomatic.

NOTE: There are occasional exceptions to the following guidelines for high risk populations where noted (Appendix A). Some sections also include surveillance guidelines following a procedure or personal history of disease/condition. This guidance is intended to educate primary care providers and to direct appropriate referral or
expectation from specialty providers. This guideline is not intended to diagnose or treat any condition. Once a health issue or condition has been identified, other clinical practice guidelines will take precedence during any further diagnosis and management.

Methodology

Methods Used to Collect/Select the Evidence:
Electronic database searches were conducted to collect evidence for review. Expert opinion and clinical experience was also considered during discussions of evidence.

Methods Used to Formulate the Recommendations:
The topic-specific workgroup members adopted recommendations developed by external organizations and/or arrived at a consensus through discussion of the literature evidence and expert experiences. Recommendations developed by each topic-specific group were reviewed and approved.

Methods Used to Assess the Quality and Strength of the Evidence:
Recommendations developed by external organizations (such as the U.S. Preventive Services Task Force) maintained the evidence grade assigned within the guidance document and were adopted for use.

Recommendations developed during the topic-specific workgroups used the Grading of Recommendations Assessment, Development and Evaluation (GRADE) algorithm (see Figure 1 within Appendix B) to establish evidence grades for each piece of literature and/or recommendation.

Rating Schemes for the Strength of the Evidence/Recommendations:
See Appendix B for the various rating schemes used within this document.

Introduction
This guideline contains recommendations designed to assist clinicians in delivering and supporting preventive health care services for patients across their lifetime.

Recommendations
The following tables summarize the recommendations based upon patient age. Detailed recommendations may be found within each topic-specific section.
### Table 1. Prenatal Preventive Health Care Summary

<table>
<thead>
<tr>
<th>Visit Frequency</th>
<th>Pre-Pregnancy</th>
<th>4 wks.</th>
<th>8 wks.</th>
<th>12 wks.</th>
<th>16 wks.</th>
<th>20 wks.</th>
<th>24 wks.</th>
<th>28 wks.</th>
<th>30 wks.</th>
<th>32 wks.</th>
<th>34 wks.</th>
<th>36 wks.</th>
<th>37 wks.</th>
<th>38 wks.</th>
<th>39 wks.</th>
<th>40+ wks.</th>
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<tbody>
<tr>
<td><strong>Alcohol</strong></td>
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<td>See Adult Table</td>
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<tr>
<td><strong>Anemia</strong></td>
<td>Once (USPSTF Grade B)</td>
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<td></td>
<td>Repeat once between 24-28 wks. (Class I, LOE C)</td>
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<tr>
<td><strong>Aneuploidy/ Neural Tube Defect Testing</strong></td>
<td>Discuss genetic screening options (Class I, LOE C)</td>
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<tr>
<td><strong>Antibody Testing</strong></td>
<td>Once (USPSTF Grade A)</td>
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<tr>
<td><strong>Asymptomatic bacteriuria</strong></td>
<td>Once at first prenatal visit (USPSTF Grade A)</td>
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<tr>
<td><strong>Breastfeeding</strong></td>
<td>Provide interventions during pregnancy to promote and support breastfeeding. (USPSTF Grade B)</td>
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<tr>
<td><strong>Chlamydia, Gonorrhea</strong></td>
<td>See Adult Table (Women Only)</td>
<td>Once if at risk (USPSTF Grade B)</td>
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<td><strong>Cystic Fibrosis</strong></td>
<td>May offer screening to all patients (Low quality evidence, weak recommendation)</td>
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<tr>
<td><strong>Depression</strong></td>
<td>See Adult Table</td>
<td>Screen using EPDS or PHQ-9 (Class Iia, LOE B)</td>
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<tr>
<td></td>
<td>Screen throughout pregnancy using EPDS or PHQ-9 if at risk (Class Iia, LOE B)</td>
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</table>

Screen throughout pregnancy using screening questions. (USPSTF Grade B)

If positive screen, complete assessment using TWEAK. (Moderate quality evidence, strong recommendation)
<table>
<thead>
<tr>
<th></th>
<th>Pre-Pregnancy</th>
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<tbody>
<tr>
<td><strong>Diabetes</strong></td>
<td>See Adult Table</td>
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<tr>
<td><strong>Folic Acid</strong></td>
<td>0.4-0.8 mg for average risk (USPSTF Grade A)</td>
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<tr>
<td><strong>Gestational Weight Gain</strong></td>
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<tr>
<td><strong>Group B Streptococcus</strong></td>
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<td><strong>Hemoglobinopathy</strong></td>
<td>If at risk (Class I, LOE C)</td>
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<tr>
<td><strong>Hepatitis B</strong></td>
<td>Once (USPSTF Grade A)</td>
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<tr>
<td><strong>HIV</strong></td>
<td>See Adult Table</td>
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<tr>
<td><strong>Immunizations</strong></td>
<td>See Adult Table</td>
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<tr>
<td><strong>Syphilis</strong></td>
<td>See Adult Table</td>
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<tr>
<td><strong>Tobacco</strong></td>
<td>See Adult Table</td>
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</table>
## INFANTS AND CHILDREN

### Table 2. Infant/Child Preventive Health Care Summary

<table>
<thead>
<tr>
<th>Visit Frequency</th>
<th>Birth to 1 mo.</th>
<th>2 mo.</th>
<th>4 mo.</th>
<th>6 mo.</th>
<th>9 mo.</th>
<th>12 mo.</th>
<th>15 mo.</th>
<th>18 mo.</th>
<th>24 mo.</th>
<th>30 mo.*</th>
<th>3-6 yrs.</th>
<th>7-10 yrs.</th>
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<tbody>
<tr>
<td><strong>Anemia</strong></td>
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<td>Test if at risk. (Low quality evidence, weak recommendation)</td>
<td>Test using CBC without differential. (Low quality evidence, weak recommendation)</td>
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<td>Routine iron supplementation if at risk. (USPSTF Grade B)</td>
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<td><strong>Autism</strong></td>
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<td>Assess using M-CHAT-R/F (High quality evidence, strong recommendation)</td>
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<td>Assess using M-CHAT-R/F (High quality evidence, strong recommendation)</td>
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<td><strong>Blood Lead</strong></td>
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<td>Perform risk assessment. Test if at risk. (Low quality evidence, weak recommendation)</td>
<td>Perform risk assessment. Test if at risk. (Low quality evidence, weak recommendation)</td>
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<td><strong>Blood Pressure</strong></td>
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<td>Measure every 6 months if at risk (Class IIb, LOE C)</td>
<td>Measure annually (Class IIb, LOE C)</td>
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<td><strong>BMI/Obesity</strong></td>
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<td>Measure BMI annually (USPSTF Grade B)</td>
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<tr>
<td><strong>Breastfeeding</strong></td>
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<td></td>
<td>Provide interventions after birth to promote and support breastfeeding. (USPSTF Grade B)</td>
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<tr>
<td><strong>Development</strong></td>
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<td>Complete ASQ. (Moderate quality evidence, strong recommendation)</td>
<td>Complete ASQ. (Moderate quality evidence, strong recommendation)</td>
<td>Complete ASQ between 24-30 months. (Moderate quality evidence, strong recommendation)</td>
<td>Complete ASQ at 4 yrs. (Very low quality evidence, strong recommendation)</td>
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<tr>
<td></td>
<td>Birth to 1 mo.</td>
<td>2 mo.</td>
<td>4 mo.</td>
<td>6 mo.</td>
<td>9 mo.</td>
<td>12 mo.</td>
<td>15 mo.</td>
<td>18 mo.</td>
<td>24 mo.</td>
<td>30 mo.*</td>
<td>3-6 yrs.</td>
<td>7-10 yrs.</td>
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<td><strong>Diabetes</strong></td>
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<td>Test for type 2 diabetes at age 10 or onset of puberty if at risk (ADA Grade E)</td>
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<td><strong>Hearing</strong></td>
<td>Perform newborn screening (Class I, LOE B)</td>
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<td>Test once between 4-6 yrs.** (Class IIa, LOE C)</td>
<td>Test once between 8-10 yrs.** (Class IIa, LOE C)</td>
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<tr>
<td><strong>Immunization</strong></td>
<td>Follow ACIP/CDC Schedule (High quality evidence, strong recommendation); Vaccine Refusal Form should be completed annually (Very low quality evidence, weak recommendation)</td>
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<td>Complete universal screen once between 9-11 yrs. using non-fasting total cholesterol and HDL (NHLBI Grade B, strongly recommended)</td>
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<td><strong>Lipids</strong></td>
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<tr>
<td><strong>Newborn Screening</strong></td>
<td>Complete within 24-48 hrs. of birth (Mandated by law)</td>
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<td><strong>Skin Cancer</strong></td>
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<td>Provide counseling beginning at age 10 if at risk (USPSTF Grade B)</td>
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<td><strong>Tobacco</strong></td>
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<td>Assess secondhand smoke exposure at every clinical visit (PHS Grade A); provide anticipatory guidance. (PHS Grade B)</td>
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<td><strong>Vision</strong></td>
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<td></td>
<td>Screen at age 3, 4, 5 yrs. (Class IIa, LOE B)</td>
<td>Test once between 6-8 yrs. and 10-12 yrs. (Class IIa, LOE C)</td>
</tr>
</tbody>
</table>

*Badger Care Plus eligible children **Medicaid patients should be screened annually between age 3-8 yrs.
<table>
<thead>
<tr>
<th><strong>Table 3. Adolescent Preventive Health Care Summary</strong></th>
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<tbody>
<tr>
<td><strong>11 yr.</strong></td>
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<tr>
<td><strong>Alcohol</strong></td>
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<td><strong>Blood Pressure</strong></td>
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<td><strong>BMI/Obesity</strong></td>
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<td><strong>Chlamydia, Gonorrhea</strong></td>
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<td><strong>Depression</strong></td>
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<td><strong>Diabetes</strong></td>
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<td><strong>Hearing</strong></td>
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<td><strong>HIV</strong></td>
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<td><strong>Immunization</strong></td>
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<td><strong>Lipids</strong></td>
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<tr>
<td><strong>Sexual Activity</strong></td>
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<td><strong>Skin Cancer</strong></td>
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<td><strong>Vision</strong></td>
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*Medicaid patients should be screened at age 12 yrs. and 16 yrs.*
### ADULTS

Table 4. Adult Preventive Health Care Summary (Men and Non-pregnant Women)

<table>
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<tr>
<th></th>
<th>18-29 yrs.</th>
<th>30-39 yrs.</th>
<th>40-49 yrs.</th>
<th>50-64 yrs.</th>
<th>65-69 yrs.</th>
<th>70 yrs.+</th>
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<td><strong>Alcohol</strong></td>
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<td>Screen annually using screening questions. (USPSTF Grade B)</td>
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<td>If positive screen, complete assessment using AUDIT-C or AUDIT if non-pregnant. (High quality evidence, strong recommendation)</td>
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<td><strong>Blood Pressure</strong></td>
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<td>Measure during every clinic visit (Class I, LOE B)</td>
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<td><strong>BMI/Obesity</strong></td>
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<td>Measure BMI annually. If obese, offer or refer to intensive, multicomponent behavioral interventions. (USPSTF Grade B)</td>
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<td><strong>Colorectal Cancer</strong></td>
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<tr>
<td>Screen patients age 50-75 yrs. using a fecal occult blood test, sigmoidoscopy, or optical colonoscopy. (USPSTF Grade A) Virtual colonoscopy (CTC) may be considered as a testing option for the detection of colorectal cancer and polyps. (Low quality evidence, strong recommendation)</td>
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<td>Routine universal screening should not be performed in patients 76-85 yrs.; however there may be considerations that support screening in an individual patient. (USPSTF Grade C)</td>
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<td>Screening intervals for follow-up to previously negative results should be based upon the test type: fecal occult blood testing should be completed annually, OR sigmoidoscopy every 5 yrs. (with fecal occult blood testing every 3 yrs.), OR optical colonoscopy every 10 yrs. (USPSTF Grade A)</td>
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<tr>
<td>Virtual colonoscopy should be completed every 5 yrs. (Low quality evidence, weak recommendation)</td>
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<td>Patients with a life expectancy of less than 10 yrs. should not be screened. (Low quality evidence, weak recommendation)</td>
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<td><strong>Cognitive Screening</strong></td>
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<tr>
<td>Routine screening is not recommended. (USPSTF I Statement)</td>
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<td>However, if performing a CMS Annual Wellness Visit screening should be completed annually using the Mini-Cog. (Low quality evidence, weak recommendation)</td>
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<td><strong>Depression</strong></td>
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<td>Screen annually using the PHQ-2. If positive screen, complete further assessment using PHQ-9. (Class Ila, LOE B)</td>
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<td><strong>Diabetes</strong></td>
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<td>Test for type 2 diabetes or prediabetes in patients age 18-44 yrs. if at risk (ADA Grade E)</td>
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<td>If no risk factors, begin testing for type 2 diabetes or prediabetes at age 45. (ADA Grade B)</td>
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<td>Repeat testing every 3 yrs., if normal result. (ADA Grade E)</td>
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<tr>
<td>18-29 yrs.</td>
<td>30-39 yrs.</td>
<td>40-49 yrs.</td>
<td>50-64 yrs.</td>
<td>65-69 yrs.</td>
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<td><strong>Falls Risk</strong></td>
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<td></td>
<td>Screen patients age 65 yrs. or older annually (AGS Grade A) using the STEADI screening questionnaire. If positive screen, complete assessment using the TUG.</td>
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<tr>
<td><strong>Hepatitis C</strong></td>
<td>Patients should be screened once if born between the years of 1945-1965. (USPSTF Grade B) Patients should be screened if at increased risk (USPSTF Grade B) At risk screening may be completed annually. (Very low quality evidence, weak recommendation)</td>
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<tr>
<td><strong>HIV</strong></td>
<td>Screen once between ages of 15-64 yrs., regardless of sexual activity. (USPSTF Grade A) Screen if at increased risk. (USPSTF Grade A) Pre-exposure prophylaxis may be indicated if at increased risk. (High quality evidence, strong recommendation)</td>
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<tr>
<td><strong>Immunizations</strong></td>
<td>Follow ACIP/CDC Schedule (High quality evidence, strong recommendation)</td>
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<td><strong>Lipids</strong></td>
<td>Complete universal screen once between the ages of 17-21 yrs. using non-fasting lipid panel. (NHLBI Grade B, strongly recommended) Test once every 5 yrs. between ages of 22-75 yrs. (NHLBI Grade B, Moderate) Test in adults using a fasting lipid panel or non-fasting total cholesterol and HDL. Patients at increased risk may need to be tested more frequently.</td>
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<tr>
<td><strong>Lung Cancer</strong></td>
<td>Complete annual screening using low dose CT in high-risk patients age 55-80 yrs. who have a 30 pack-year smoking history AND are a current smokers or have quit within the last 15 yrs. (USPSTF Grade B) Discontinue screening once patient has not smoked for 15 yrs. or develops a health problem which limits life expectancy. (USPSTF Grade B)</td>
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<td><strong>Sexual Activity</strong></td>
<td>Provide behavioral counseling if sexually active and at increased risk for sexually transmitted infection(s) (USPSTF Grade B)</td>
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<td><strong>Skin Cancer</strong></td>
<td>Provide behavioral counseling about minimizing ultraviolet radiation exposure in patients age 18-24 yrs. who are at increased risk. (USPSTF Grade B) Provide behavioral counseling on sun protective behavior to all patients 25 yrs. or older. (Very low quality evidence, weak recommendation)</td>
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<td><strong>Syphilis</strong></td>
<td>Screen if at increased risk. (USPSTF Grade A) Screen MSM annually using a complete syphilis serology with confirmatory testing. (High quality evidence, strong recommendation)</td>
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<td><strong>Tobacco</strong></td>
<td>Assess for tobacco use and/or secondhand smoke exposure at every clinical visit (PHS Grade A)</td>
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<td>Table 5. Adult Preventive Health Care Summary (Men Only)</td>
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<td></td>
<td>18-29 yrs.</td>
<td>30-39 yrs.</td>
<td>40-49 yrs.</td>
<td>50-64 yrs.</td>
<td>65-69 yrs.</td>
<td>70 yrs.+</td>
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<tr>
<td>Abdominal Aortic Aneurysm</td>
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<td>Screen once between the ages of 65-75 yrs. if patient ever smoked using abdominal duplex ultrasonography. <em>(USPSTF Grade B)</em></td>
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<td>Selective screening may be considered in men who have never smoked with a family history (first-degree relative). <em>(USPSTF Grade C)</em></td>
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<tr>
<td>Chlamydia, Gonorrhea</td>
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<td>Insufficient evidence in regards to routine screening in heterosexual men. <em>(USPSTF I Statement)</em></td>
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<td></td>
<td>Screen MSM annually for chlamydia and gonorrhea. <em>(High quality evidence, strong recommendation)</em></td>
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<tr>
<td>Osteoporosis</td>
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<td>Perform an initial FRAX assessment in men 70 yrs. Screening using DEXA may be considered if indicated by FRAX score. <em>(Low quality evidence, weak recommendation)</em></td>
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<td>Prostate Cancer</td>
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<td>Counseling may be considered if at increased risk, however routine PSA testing is not recommended. <em>(Very low quality evidence, weak recommendation)</em></td>
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<td>Shared decision making should be considered once in average risk however routine PSA testing is not recommended. <em>(Moderate quality evidence, weak recommendation)</em></td>
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<td></td>
<td>Routine PSA testing is not recommended. <em>(High quality evidence, strong recommendation)</em></td>
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<td>Men with a life expectancy of less than 10 yrs. should not be screened. <em>(Moderate quality evidence, weak recommendation)</em></td>
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<td>Table 6. Adult Preventive Health Care Summary (Non-pregnant Women Only)</td>
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<tr>
<td><strong>Abdominal Aortic Aneurysm</strong></td>
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<tr>
<td>18-29 yrs.</td>
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<td>30-39 yrs.</td>
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<td>40-49 yrs.</td>
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<td>50-64 yrs.</td>
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<td>65-69 yrs.</td>
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<td>70 yrs.+</td>
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<tr>
<td>Current evidence insufficient to assess benefits and harms of screening in women 65-75 yrs. who have smoked. (USPSTF I Statement)</td>
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<tr>
<td>It is not recommended to screen women who have never smoked. (USPSTF Grade D)</td>
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<td><strong>Breast Cancer</strong></td>
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<td>(Mammogram with or without clinical breast exam)</td>
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<tr>
<td>18-29 yrs.</td>
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<td>30-39 yrs.</td>
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<td>40-49 yrs.</td>
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<td>50-64 yrs.</td>
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<tr>
<td>65-69 yrs.</td>
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<tr>
<td>70 yrs.+</td>
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<td>A baseline screening mammogram should be obtained to assess breast density-related risk in 40-49 yr. old women, preferably at age 40. (Very low quality evidence, weak recommendation)</td>
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<tr>
<td>Recommend discussion of the risk and benefits of mammography to consider additional screening mammography every 1-2 yrs. in the context of breast density and other risk factors. (Moderate quality evidence, weak recommendation)</td>
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<tr>
<td>Screen women age 50-74 yrs. every 1-2 yrs. (Moderate quality evidence, strong recommendation)</td>
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<td>Consider mammography screening in women age 75 yrs. or older every 1-2 yrs. based upon a discussion of the risks and benefits, as well as life expectancy. (Low quality evidence, weak recommendation)</td>
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<td>Women with a life expectancy of less than 10 yrs. should not be screened. (Low quality evidence, weak recommendation)</td>
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<tr>
<td>You may consider digital breast tomosynthesis (DBT), a 3-dimensional mammography method.</td>
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<td>Condition</td>
<td>18-29 yrs.</td>
<td>30-39 yrs.</td>
<td>40-49 yrs.</td>
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<td>65-69 yrs.</td>
<td>70 yrs.+</td>
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<td><strong>Cervical Cancer</strong></td>
<td>Screening is not recommended in patients younger than 21 yrs. (USPSTF Grade D)</td>
<td>Screen women age 30-65 yrs. with a combination cytology and high risk HPV co-test every 5 yrs. OR screen with cytology alone every 3 yrs. (USPSTF Grade A)</td>
<td>Screen patients age 21-29 yrs. using cytology alone every 3 yrs. (USPSTF Grade A)</td>
<td>Stop screening at age 65 if three normal results OR two negative high risk HPV results in the last decade AND no history of CIN 2, 3, or cervical cancer in last 20 yrs. (USPSTF Grade D)</td>
<td></td>
<td>More frequent screening intervals (i.e., annual) is not recommended for average risk women of any age. (High quality evidence, strong recommendation)</td>
</tr>
<tr>
<td><strong>Chlamydia, Gonorrhea</strong></td>
<td>Screen sexually active patients younger than 24 yrs. annually for chlamydia and gonorrhea infection. (USPSTF Grade B)</td>
<td>Screen sexually active patients age 30-65 yrs. annually if at increased risk. (USPSTF Grade B)</td>
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<td><strong>Osteoporosis</strong></td>
<td>Perform initial FRAX assessment in postmenopausal women if at risk. Screening may be completed using central DEXA if indicated by FRAX score (9.3%). (USPSTF Grade B)</td>
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<td></td>
<td>Perform initial screen in women 65 yrs. using central DEXA. (USPSTF Grade B)</td>
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<td><strong>Violence</strong></td>
<td>Screen women of childbearing age annually for intimate partner violence using the HITS assessment tool. (Moderate quality evidence, weak recommendation)</td>
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USPSTF: United States Preventive Services Task Force
Topic-specific Recommendations

ABDOMINAL AORTIC ANEURYSM

Patients 65-75 years

It is recommended to screen men once who have ever smoked (at least 100 cigarettes in his lifetime) between the ages of 65-75 years using abdominal duplex ultrasonography.1,2 (USPSTF Grade B); this screening is covered by Medicare.

Selective screening for men who have never smoked with a family history (first-degree relative) may be considered1,3,4 (USPSTF Grade C); this screening is covered by Medicare.

The current evidence is insufficient to assess the balance of benefits and harms related to AAA screening in women age 65-75 years who have ever smoked (at least 100 cigarettes in her lifetime).1 (USPSTF I Statement) It is not recommended to routinely screen women who have never smoked.1 (USPSTF Grade D) Screening is covered by Medicare when a woman has a family history (first-degree relative).

Surveillance

Patients who have undergone abdominal aortic aneurysm repair are no longer considered average risk and fall outside the scope of this guideline.

Patients determined to have an abdominal aortic aneurysm may require modified screening recommendations, as outlined below (Table 7).

Table 7. Abdominal Aortic Aneurysm Surveillance Recommendations

<table>
<thead>
<tr>
<th>Size determined by initial screening</th>
<th>Suggested Follow-up</th>
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<tbody>
<tr>
<td>3 cm - 3.5 cm</td>
<td>5 years (following a complete ultrasound)</td>
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<tr>
<td>3.6 cm – 4 cm</td>
<td>2 years (following a complete ultrasound)</td>
</tr>
<tr>
<td>4.1 cm – 4.5 cm</td>
<td>1 year (if clinically warranted further imaging with CT)</td>
</tr>
<tr>
<td>4.6 cm – 5 cm</td>
<td>6 months (if clinically warranted further imaging with CT)</td>
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<tr>
<td>&gt; 5.0 cm</td>
<td>Consider referral to Vascular Surgery</td>
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</table>

ALCOHOL USE

Patients 11-17 years

Adolescent patients age 11-17 years should be screened for alcohol use annually.6,7 (Low quality evidence, strong recommendation) Suggested screening questions are included in Table 8.

Adolescent patients who respond “yes” to any of the screening questions should be assessed using the CRAFFT Tool. The CAR question should be asked regardless of patient responses during screening. (Low quality evidence, strong recommendation)
**Patients 18 years or older**

Adults should be screened for their alcohol use annually\(^7\)-\(^9\) ([USPSTF Grade B](https://www.uspreventiveservicestaskforce.org/uspstf)), with pregnant women being screened throughout their pregnancy.\(^10\)-\(^12\) Suggested screening question(s) based upon patient scenario are included in Table 8.

Adults (men and non-pregnant women) who report excessive alcohol use one or more times within the last year are considered a positive screen, and should be assessed using the AUDIT-C or AUDIT. ([High quality evidence, strong recommendation](https://www.uspreventiveservicestaskforce.org/uspstf)) Any pregnant woman who answers “yes” to Question 1 (or “no” to Question 2) in Table 8 should be assessed using the TWEAK tool. ([Moderate quality evidence, strong recommendation](https://www.uspreventiveservicestaskforce.org/uspstf)).

**Table 8. Alcohol Screening Question(s) Based Upon Patient Scenario**

<table>
<thead>
<tr>
<th>Single Screening Question (Adults 18 yrs. or older)</th>
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<tbody>
<tr>
<td>All female patients and males &gt; 65 years:</td>
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<tr>
<td>How often do you drink 4 or more drinks in a day within the last year?*</td>
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<tr>
<td>Male patients &lt; 65 years:</td>
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<tr>
<td>How often do you drink 5 or more drinks in a single day within the last year?*</td>
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<table>
<thead>
<tr>
<th>Screening Questions (Adolescents 11-17 yrs.)</th>
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<tr>
<td>During the past 12 months, did you:</td>
</tr>
<tr>
<td>1. Drink any alcohol (more than a few sips)? (Do not count sips of alcohol taken during family or religious events.)</td>
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<tr>
<td>2. Smoke any marijuana or hashish?</td>
</tr>
<tr>
<td>3. Use anything else to get high? (“anything else” includes illegal drugs, over the counter and prescription drugs, and things that you sniff or “huff”)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Screening Questions (Pregnant Adult Women)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did you drink alcohol before you knew you were pregnant?</td>
</tr>
<tr>
<td>2. (If yes to Question 1) Have you been able to stop or cut down since you found out you were pregnant?</td>
</tr>
</tbody>
</table>

*Answer Options: Never; Once or twice; 3-5 times; 6-20 times; More than 20 times.

**ANEMIA**

**Risk Factors**

Positive risk factors for iron deficiency or iron-deficiency anemia\(^13\) include:

- History of prematurity or low birth weight;
- Exposure to lead;
- Exclusive breastfeeding beyond 4 months of age without supplemental iron;
- Weaning to whole milk or complementary foods that do not include iron-fortified cereals or foods naturally rich in iron;
- Feeding problems
- Poor growth
- Inadequate nutrition (typically in infants with special needs or low socioeconomic status)
Patients age 1 year
Universal screening for anemia via CBC without differential lab is recommended by the American Academy of Pediatrics (2010) at approximately 1 year of age.\textsuperscript{13,14} \textit{(Low quality evidence, weak recommendation)}

Patients At Increased Risk (9 months, 15-18 months)
Selective screening can be performed at any age when the risk factors have been identified, including risk of inadequate iron intake according to dietary history.\textsuperscript{13} A risk assessment of factors associated with iron deficiency or iron-deficiency anemia may be considered for any patient age 9 months and 15-18 months (see risk factors above).\textsuperscript{13,15} \textit{(Low quality evidence, weak recommendation)}

Patients exhibiting any of the above risk factors or with a Hb concentration of less than 11.0 mg/dL may have serum ferritin (SF), C-reactive protein (CRP), and reticulocyte hemoglobin (CHr) levels measured in addition to Hb concentration to increase the sensitivity and specificity of the diagnosis.\textsuperscript{13}

Iron Supplementation
Routine iron supplementation for asymptomatic children aged 6-12 months at an increased risk is recommended by the U.S. Preventive Services Task Force.\textsuperscript{16,17} \textit{(USPSTF Grade B)} 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 recent immigrants and premature and low birth weight infants.\textsuperscript{16}

AUTISM SPECTRUM DISORDER

Patients 18 and 24 months
Autism screening is recommended in patients age 18 and 24 months.\textsuperscript{15,18} \textit{(High quality evidence, strong recommendation)} Screening should be completed using the Modified Checklist for Autism in Toddlers, Revised with Follow-up (M-CHAT-R/F) assessment tool.\textsuperscript{19}

BLOOD LEAD

Risk Factors
The 4 Easy Questions for lead exposure should be completed to assess risk.\textsuperscript{20}

<table>
<thead>
<tr>
<th>4 Easy Questions</th>
<th>Positive Response(s) for Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Does the child now live in or visit a house or building built before 1950 or have they ever in the past? (include places such as a daycare, home of friends, grandparents or other relatives)</td>
<td>Yes or Don’t Know</td>
</tr>
<tr>
<td>2. Does the child now live in or visit a house or building built before 1978 with recent or ongoing renovations or have they ever in the past? (include places such as daycare, home of friends, grandparents or other relatives)</td>
<td>Yes or Don’t Know</td>
</tr>
</tbody>
</table>
3. Does the child have a brother, sister or playmate who has/had lead poisoning?  Yes

4. Is the child enrolled in (or eligible for) Medicaid or WIC?  Yes*

*Requirement of state and federal policy

**Patients 12 months, 24 months or between 3-6 years**

It is recommended to perform a risk assessment (Table 9) for lead exposure during the 12 and 24 month well child visits, and between 3-6 years of age.15,20 (Low quality evidence, weak recommendation) Lead tests should be completed on patients who screen positively, especially patients eligible for Medicaid (BadgerCare Plus).20

Routine screening for elevated blood lead levels should not be performed in asymptomatic children age 1-5 years who are at average risk.21 (USPSTF Grade D)

For additional screening recommendations for patients from Milwaukee or Racine, reference http://www.dhs.wisconsin.gov/lead/doc/1pgScreeningRecom.pdf.

**BLOOD PRESSURE**

Return to Infant/Child Table | Return to Adolescent Table | Return to Adult Table

**Risk Factors**

Positive risk factors for blood pressure screening include:14,15,22,23:

- History of prematurity, low birth weight, or neonatal complications requiring ICU care
- Congenital heart disease (repaired, unrepaird, or family history)
- Elevated body mass index (BMI)/obesity (BMI > 95th percentile)
- Recurrent UTI, hematuria, or proteinuria
- Known renal disease or urologic malformations
- Solid organ transplant
- Malignancy or bone marrow transplant
- Treatment with drugs known to raise blood pressure
- Other systemic illnesses associated with hypertension (i.e., neurofibromatosis, evidence of elevated intracranial pressure, tuberous sclerosis, etc.).

**Patients under 3 years of age**

Patients under the age of 3 years with specific risk conditions (see above) or changes in risk may have their blood pressure obtained every six months during health supervision visits15 or other non-specific acute illness visits. (Class IIb, LOE C)

**Patients age 3-18 years**

Patients over the age of 3 years may have their blood pressure measured annually, preferably during their health supervision visits. (Class IIb, LOE C)

Blood pressure measurements should not be obtained during every clinic visit (Class III, LOE C), despite current recommendations from the National High Blood Pressure Education Program (NHBPEP) Working Group on Children and Adolescents.23,24 The U.S. Preventive Services Task Force (USPSTF) found no direct evidence that routine blood pressure measurement accurately
identifies children and adolescents who are at increased risk for cardiovascular disease in adulthood.

**Patients older than 18 years of age**

Adult patients should have their blood pressure measured at every primary care clinic visit.\(^{25}\) *(Class I, LOE B)*

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**BREAST CANCER**

Screening mammography is performed in asymptomatic women who do not currently have any breast complaints. The following recommendations are made for average risk women, while high risk factors and recommendations are outlined in Appendix A. Women with clinical signs or symptoms should undergo diagnostic imaging with mammography and/or ultrasound, based on patient age.

**Risk Factors**
The risk of breast cancer increases with patient age. Several other factors also increase the risk of developing breast cancer, and may be considered in decisions regarding the frequency of screening mammography (see Healthwise Breast Cancer Screening - Health Professional Information).\(^{26}\) The risk of breast cancer increases with increasing mammographic breast density, as displayed in Table 10 below.\(^{27}\)

**Table 10. Absolute Risk of Breast Cancer Incidence Over 5 Years by BI-RADS Category**

<table>
<thead>
<tr>
<th>BI-RADS Category</th>
<th>Patient Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40-44 yrs.</td>
</tr>
<tr>
<td>A (almost entirely fatty)</td>
<td>0.2%</td>
</tr>
<tr>
<td>B (scattered areas of fibroglandular density)</td>
<td>0.5%</td>
</tr>
<tr>
<td>C (heterogeneously dense)</td>
<td>0.7%</td>
</tr>
<tr>
<td>D (extremely dense)</td>
<td>1.0%</td>
</tr>
<tr>
<td>Average Risk (no density information)</td>
<td>0.7%</td>
</tr>
</tbody>
</table>

*Example: A 57 year old woman has an average risk of 1.7%. If she has a breast density of BI-RADS Category D, her risk is 2.8%; while with Category A her risk is 0.7%.

There are several other minor risk factors which may interact in complex and non-additive ways. It is still not known the degree of clinical significance that these factors play in breast cancer risk individually or in combination.

1. Obesity (BMI > 30)
2. Alcohol intake on average of two drinks per day
3. Nulliparity
4. First birth after age 30
Patients with a life expectancy of less than 10 years should not be screened. (Low quality evidence, weak recommendation)

**Patients 40-49 years**
A baseline screening mammogram should be obtained to assess breast density-related risk in 40-49 year old women, preferably at age 40. (Very low quality evidence, weak recommendation) It is recommended to discuss the risks and benefits of mammography screening every 1-2 years in this age group to consider additional screening mammography in the context of breast density and other risk factors (see above). (Moderate quality evidence, weak recommendation)

The U.S. Preventive Services Task Force and Canadian Task Force encourage providers to consider biennial screening in the context of each individual patient's preferences and the benefits and harms. In contrast, the National Comprehensive Cancer Network and American Cancer Society recommend annual screening. Consideration of additional biennial or annual screening following the baseline examination may be influenced by the patient's expressed preference during the shared-decision making discussion or by mammographic breast density.

**Patients 50-74 years**
Routine mammography screening is recommended every 1-2 years. (Moderate quality evidence, strong recommendation)

The U.S. Preventive Services Task Force and Canadian Task Force recommend biennial screening for average risk women, however other organizations such as the American Cancer Society or National Comprehensive Cancer Network recommend annual screening. Consideration of biennial or annual screening may be influenced by patient's expressed preference during the shared decision-making discussion or mammographic breast density.

**Patients 75 years or older**
Consider mammography screening in women age 75 and older every 1-2 years based upon a discussion of the risks and benefits with the patient, as well as consideration of a patient's life expectancy. (Low quality evidence, weak recommendation)

**Testing Options**
Digital Breast Tomosynthesis (DBT): You may consider digital breast tomosynthesis (DBT), a 3-dimensional mammography method. (Low quality evidence, weak recommendation) DBT obtains 3-dimensional mammography images in addition to conventional 2-dimensional digital mammography images. It is not yet known which particular groups of women are most likely to benefit from DBT, but early results suggest it is a promising technique that may reduce false positives and increase cancer detection compared to conventional 2-dimensional digital mammography alone. DBT may be most useful for circumstances when conventional mammography has been shown to be less accurate, including in women less than 50 years of age, or in women with heterogeneous or extremely dense breasts on mammography. DBT requires a longer (approximately one minute more) scan time, increases patient radiation exposure, and may not be covered by insurance.

Ultrasound or Magnetic Resonance Imaging (MRI): The use of ultrasound or MRI for routine breast cancer screening in average risk women is not recommended. Low quality evidence, strong recommendation
recommendation) Patients at increased risk for breast cancer should follow the recommendations outlined within Appendix A.

CERVICAL CANCER

Note: More frequent screening intervals than those listed in the following recommendations (i.e., annual papsmears) are not recommended for average risk women of any age. (High quality evidence, strong recommendation) Increased screening frequency offers little additional benefit, with large increases in harms such as additional procedures, assessment, and treatment of transient lesions which would otherwise resolve on their own.46

Patients younger than 21 years of age
Cervical cancer screening via cytology (Papanicolaou (pap) smear) is not recommended for patients less than 21 years, regardless of age of sexual initiation.46-49 (USPSTF Grade D) Any adolescent with a history of normal cytologic screening should not be rescreened until the age of 21 years.47 Due to the high prevalence of human papillomavirus (HPV) in adolescents, HPV testing is not recommended.47,49-51 (USPSTF Grade D)

Patients 21-29 years of age
It is recommended to screen for cervical cancer using cytology (Pap smear) alone every three years.46,48,49 (USPSTF Grade A) Due to the high prevalence of HPV and low incidence of cervical cancer in this age group, co-testing is not recommended.46,48,49 (USPSTF Grade D)

Patients 30-65 years of age
Screen women age 30-65 with a combination of cytology (liquid-based or conventional) and high risk HPV co-test every 5 years OR screen with cytology (liquid-based or conventional) only every three years.46,48,49 (USPSTF Grade A)

Stop screening at age 65 if three normal cytology results OR 2 negative high risk HPV results in the last decade AND no history of CIN 2, 3 or cervical cancer in the last 20 years.46,48,49 (USPSTF Grade D)

Special Considerations
Hysterectomy: No screening should be completed after hysterectomy with removal of the cervix, unless there is a history of CIN 2 or greater in the last 20 years.46,48 (USPSTF Grade D) Patients who have had supracervical hysterectomy should continue to have routine screening.46,49

HPV Vaccination: Routine screening guidelines should be followed in patients who have received an HPV vaccination, as the long-term efficacy of vaccination is not yet known.48,49

HPV Test for Primary Screening: The cobas HPV test is FDA-approved as a primary screening tool for cervical cancer screening.52,53 Published consensus or position statements by a national organization or external guideline are not currently available.

Surveillance
Women age 30-65 years with both a negative cytology and HPV test result have been shown to be at an extremely low risk of developing cervical cancer during the following 4-6 years54, therefore
women 30-65 years with both negative tests may be rescreened every 5 years.\textsuperscript{49} \textit{(High quality evidence, strong recommendation)}

Screening recommendations and follow-up testing in adolescent patients (under 21 years) with ASC-US and LSIL should be managed with repeat cytology alone at 12 month intervals, without colposcopy or HPV testing.\textsuperscript{51} For patients age 21 and over with abnormal cervical cancer screening test results or cancer precursors, surveillance recommendations may be found in the 2013 ASCCP guidelines\textsuperscript{55} (\url{http://www.asccp.org/Portals/9/docs/Algorithms%207.30.13.pdf}).

**CHLAMYDIA \textit{(C. trachomatis)} AND GONORRHEA \textit{(N. gonorrhoeae)}**

<table>
<thead>
<tr>
<th>Return to Adolescent Table</th>
<th>Return to Prenatal Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return to Adult Table (Men Only)</td>
<td>Return to Adult Table (Women Only)</td>
</tr>
</tbody>
</table>

**Risk Factors**

Positive risk factors for chlamydial or gonococcal infections include\textsuperscript{56,57}:

- History of chlamydia or gonorrhea infection or other sexually transmitted infection
- New or multiple sexual partners
- Sexual partner with concurrent partners
- Sexual partner with a sexually transmitted infection
- Inconsistent condom use among persons who are not in mutually monogamous relationships
- Exchanging sex for money or drugs.

**Female Patients younger than 24 years**

All sexually active (non-pregnant) female patients 24 years or younger should be screened for chlamydial or gonococcal infection.\textsuperscript{56,58} \textit{(USPSTF Grade B)} The Centers for Disease Control and Prevention (CDC) recommends annual screening in the non-pregnant population age 24 years or younger.\textsuperscript{58}

**Female Patients 25 years or older**

Sexually active non-pregnant female patients age 25 years or older at an increased risk for infection should be screened (see risk factors above).\textsuperscript{56} \textit{(USPSTF Grade B)} The CDC recommends annual screening in patients 25 years or older at increased risk.

**Pregnant Female Patients (4 weeks, 28 weeks+)**

All pregnant women 24 years or younger and those 25 years or older at increased risk should be screened (see risk factors above).\textsuperscript{56} \textit{(USPSTF Grade B)} The CDC and Wisconsin Association for Perinatal Care (WAPC) recommend screening during the first prenatal visit. Patients who remain at an increased risk throughout pregnancy should also be re-screened during their third trimester.\textsuperscript{57,58}

**Heterosexual Male Patients**

Insufficient evidence exists in regards to routine chlamydia or gonorrhea screening in sexually active heterosexual men \textit{(USPSTF I Statement)}, however screening may be considered in clinical settings associated with high prevalence of chlamydia (i.e., adolescent clinics, correctional facilities, and STD clinics).\textsuperscript{56,58}

**Men Who Have Sex With Men (MSM)**

It is recommended by CDC that men who have sex with men (MSM) are screened annually using the following tests based upon sexual behavior: urine test using nucleic acid amplification testing
(NAAT) (insertive intercourse) and/or NAAT of a rectal swab (receptive anal intercourse). NAAT for the detection of chlamydia infection is not recommended in MSM patients who have performed receptive oral intercourse within the preceding year. NAAT of pharyngeal swab (receptive oral intercourse) is recommended for the detection of gonococcal infection. (High quality evidence, strong recommendation) More frequent STD screening (i.e., every 3-6 months) may be indicated for MSM with multiple or anonymous partners or MSM patients who have sex in conjunction with illicit drug use or whose sex partners participate in similar high-risk behaviors. (High quality evidence, strong recommendation)

**Testing Options**
Chlamydial or gonococcal infections are diagnosed by using nucleic acid amplification tests (NAAT), which are approved by the FDA for use on urogenital sites, including male and female urine; clinician-collected endocervical, vaginal, and male urethral specimens; and self-collected vaginal specimens in clinical settings. Rectal and pharyngeal swabs can be collected from persons who engage in receptive anal intercourse and oral sex.

**Cognitive Screening**

**Patients 65 years or older**
The USPSTF concluded that current evidence is insufficient to assess the balance and harms of universal screening for cognitive impairment (USPSTF I Statement); therefore routine cognitive screening is not recommended.

However, assessment of a patient’s cognitive function by direct observation is required by the Centers for Medicare and Medicaid Services (CMS) during the Annual Wellness Visit (AWV). If an AWV is performed, it is recommended that providers use the Mini-Cog assessment to screen patients age 65 years annually during the Annual Wellness Visit. (Low quality evidence, weak recommendation)

**Colorectal Cancer**

**Patients 50-75 years**
It is recommended to screen patients age 50-75 years for colorectal cancer. (USPSTF Grade A) Patients with a life expectancy of less than 10 years should not be screened. (Low quality evidence, weak recommendation)

**Patients 76 years or older**
Routine screening should not be performed in patients who have had a consistently negative screening history and are not at an increased risk for colorectal cancer. The U.S. Preventive Services Task Force recommends against routine colorectal cancer screening in adults ages 76-85 years; however there may be considerations that support screening in an individual patient. (USPSTF Grade C) Individual considerations for screening in patients 76 years or older may include patients without previous screening or those with an increased personal risk of colorectal cancer (i.e., personal history of adenomas, personal or family history of colorectal cancer: see Appendix A). (Low quality evidence, weak recommendation) Patients with a life expectancy of less than 10 years should not be screened. (Low quality evidence, weak recommendation)
Testing Options
The most important outcome is that eligible patients are screened. Therefore, appropriate patient-physician discussion of the screening testing options should occur. Attention should be given to patient risk factors, ethnicity, education level, and socioeconomic status, as evidence suggests these factors can influence patient acceptance of colorectal cancer screening. The table below (Table 12) summarizes key differences between the screening test options to offer physician support and guidance during the shared-decision making discussion.

Colorectal cancer screening using a fecal occult blood test (FIT), sigmoidoscopy, or optical colonoscopy is recommended. (USPSTF Grade A) Virtual colonoscopy (CTC) may be considered as a testing option for the detection of cancer and polyps. (Low quality evidence, strong recommendation) The USPSTF (2008) concluded that the evidence is insufficient to assess the benefits and harms of CTC as a screening modality for colorectal cancer. Recent evidence has consistently demonstrated high sensitivity and specificity for detecting colorectal cancer and large adenomatous polyps.

Cologuard® is FDA-approved as a non-invasive stool-based screening test for colorectal cancer. The test is not currently recommended.

Screening Intervals
Screening intervals for follow-up to previously negative results should be based upon the test type; fecal occult blood testing should be completed annually. OR sigmoidoscopy every 5 years (with fecal occult blood testing every 3 years), OR optical colonoscopy every 10 years. (USPSTF Grade A) Virtual colonoscopy screening should be completed every 5 years. (Low quality evidence, weak recommendation)

Surveillance
Patients who have had polyps removed in the past are no longer considered average risk and fall outside of the scope of this guideline. These patients may require modified screening recommendations as outlined below (Table 11).

<table>
<thead>
<tr>
<th>Polypectomy</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyperplastic polyp</td>
<td>No follow-up necessary, screen using average risk recommendations.</td>
</tr>
<tr>
<td>1-2 adenomas or sessile serrated adenomas/polyps &lt; 10 mm</td>
<td>Repeat colonoscopy in 5 years.</td>
</tr>
<tr>
<td>3+ adenomas, adenomas &gt; 10 mm, adenomas with high grade dysplasia, adenomas with villous features</td>
<td>Repeat colonoscopy in 3 years. If follow-up is normal or shows only 1-2 adenomas with low grade dysplasia, the subsequent screen should occur in 5 years.</td>
</tr>
<tr>
<td>Sessile serrated adenomas/polyps &gt; 10 mm or sessile serrated adenomas with high grade dysplasia</td>
<td></td>
</tr>
<tr>
<td>Incomplete or piecemeal resection of large sessile adenoma or sessile serrated adenoma/polyp</td>
<td>Repeat colonoscopy in 3-6 months</td>
</tr>
<tr>
<td>Test</td>
<td>Features</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Colonoscopy</strong></td>
<td>- Procedure takes about 30 minutes</td>
</tr>
<tr>
<td></td>
<td>- Can usually view entire colon</td>
</tr>
<tr>
<td></td>
<td>- Full bowel preparation needed</td>
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<tr>
<td></td>
<td>- Sedation of some kind usually needed</td>
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<tr>
<td></td>
<td>- Can biopsy and remove polyps</td>
</tr>
<tr>
<td></td>
<td>- Can diagnose other diseases of the colon</td>
</tr>
<tr>
<td></td>
<td>- Done every 10 years*</td>
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<tr>
<td><strong>Fecal Occult Blood Test (FOBT)</strong></td>
<td>- Done at home</td>
</tr>
<tr>
<td></td>
<td>- No direct risk to the colon</td>
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<tr>
<td></td>
<td>- No bowel preparation</td>
</tr>
<tr>
<td></td>
<td>- No sedation needed</td>
</tr>
<tr>
<td></td>
<td>- Should be done annually*</td>
</tr>
<tr>
<td><strong>Fecal Immunohistochemical Test (FIT)</strong></td>
<td>- Done at home</td>
</tr>
<tr>
<td></td>
<td>- No direct risk to the colon</td>
</tr>
<tr>
<td></td>
<td>- No bowel preparation</td>
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<td></td>
<td>- No sedation needed</td>
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<tr>
<td></td>
<td>- No pretest dietary limitations</td>
</tr>
<tr>
<td></td>
<td>- Should be done annually*</td>
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</tbody>
</table>

*Frequency based upon normal (negative) results.
DEPRESSION

Risk Factors
Risk factors for depression\textsuperscript{81}:
- Prior episode(s)
- Family history of depressive disorder
- Female gender
- Postpartum period
- Medical co-morbidity
- Lack of social support
- Major life stressor (loss of loved one or other members of social network)
- Substance abuse
- History of adverse childhood events
- Negative cognitive style

Patients 12-17 years
All patients age 12 and older should be screened annually using a validated tool, such as the PHQ-2. \textsuperscript{(Class IIa, LOE B)} Patients who screen positive on the PHQ-2 (score > 2) should be administered the CES-DC or the PHQ-9. A score of 15 or greater on the CES-DC indicates clinically significant depressive symptoms and the need for clinical evaluation.

Patients 18 years or older
All patients age 18 year or older should be screened annually using a validated tool, such as the PHQ-2. \textsuperscript{(Class IIa, LOE B)} Patients who screen positive on the PHQ-2 (score > 2) should complete the PHQ-9. A score of 10 or greater on the PHQ-9 indicates clinically significant depressive symptoms and the need for clinical evaluation.

Pregnant Patients
Depression during pregnancy does not differ from depression during other periods of life.\textsuperscript{82} \textsuperscript{(Class IIa, LOE B)} Therefore, screening tools such as the Edinburgh Postnatal Depression Scale (EPDS) or the PHQ-9 should be administered at the first prenatal visit and if the woman has risks for depression or depression is suspected (see risk factors above).\textsuperscript{83,84}

DEVELOPMENTAL MILESTONES

Patients age 9, 18, 24-30 months and 4 years
Universal developmental screening with a standardized validated developmental screening tool (Ages and Stages Questionnaire-3)\textsuperscript{85} is recommended for all children at 9, 18, and 24-30 months of age. Targeted screening at any age may be completed when developmental concerns are identified.\textsuperscript{15,86,87} \textsuperscript{(Moderate quality evidence, strong recommendation)}

Screening using the Ages and Stages Questionnaire is also recommended at age 4 years. \textsuperscript{(Very low quality evidence, strong recommendation)}

DIABETES
Additional recommendations for the detection, diagnosis, and treatment of diabetes mellitus can be found in the 2014 ADA Standards of Medical Care in Diabetes Guideline.

Pediatric Risk Factors
Positive risk factors for type 2 diabetes:
- Family history of type 2 diabetes in first- or second-degree relative
- Race/ethnicity (Native American, African American, Latino, Asian American, Pacific Islander)
- Signs of insulin resistance or conditions associated with insulin resistance (acanthosis nigricans, hypertension, dyslipidemia, polycystic ovarian syndrome, or small-for-gestational-age birth weight)
- Maternal history of diabetes or GDM during the child’s gestation

Adult Risk Factors
Positive risk factors for type 2 diabetes:
- Physical inactivity
- First-degree relative with diabetes
- High-risk race/ethnicity (i.e., African American, Latino, Native American, Asian American, Pacific Islander)
- Women who delivered a baby weighing > 9lb or were diagnosed with GDM
- Hypertension (>140/90 mmHg or on therapy for hypertension)
- HDL cholesterol level < 35 mg/dL (0.90 mmol/L) and/or a triglyceride level > 250 mg/dL (2.82 mmol/L)
- Women with polycystic ovarian syndrome
- A1C > 5.7%, IGT, or IFG on previous testing
- Other clinical conditions associated with insulin resistance (i.e., severe obesity, acanthosis nigricans)
- History of CVD

Patients 10-18 years
Testing for type 2 diabetes and prediabetes should be considered in asymptomatic children and adolescents who are overweight or obese (BMI 85th percentile for age and sex, weight for height 85th percentile, or weight 120% of ideal for height) AND who have two or more additional risk factors for diabetes (see above). Testing should begin at age 10 or at the onset of puberty, if puberty occurs at a younger age, and repeated every 3 years. (ADA Grade E) Tests for diabetes or prediabetes should include A1C, FPG, or 2-hour 75-g OGTT. (ADA Grade B)

Patients 19-44 years
Testing for type 2 diabetes and prediabetes should be considered in asymptomatic adults who are overweight or obese (BMI ≥ 25 kg/m²) AND who have one or more additional risk factors for diabetes (see above). If tests are normal, repeat testing at least at 3-year intervals, with consideration of more frequent testing depending on initial results (i.e., those with prediabetes should be tested yearly) and risk status. (ADA Grade E) Tests for diabetes or prediabetes should include A1C, FPG, or 2-hour 75-g OGTT. (ADA Grade B)

Patients 45 years or older
Adults who do not exhibit any risk factors should be tested beginning at age 45 years. *(ADA Grade B)* If tests are normal, repeat testing at least at 3-year intervals, with consideration of more frequent testing depending on initial results (i.e., those with prediabetes should be tested yearly) and risk status. *(ADA Grade E)* Tests for diabetes or prediabetes should include A1C, FPG, or 2-hour 75-g OGTT. *(ADA Grade B)*

**Pregnant Women**

It is recommended by the American Diabetes Association that patients are screened for undiagnosed type 2 diabetes at the first prenatal visit in those with risk factors, using standard diagnostic criteria (see adult risk factors above). *(ADA Grade B)*

In addition, patients not previously known to have diabetes should be screened for gestational diabetes mellitus (GDM) at 24-28 weeks. *(ADA Grade A)* Women with a history of GDM should have lifelong screening for the development of diabetes or prediabetes every 3 years. *(ADA Grade B)* Women with a history of GDM found to have prediabetes should receive lifestyle interventions or metformin to prevent diabetes. *(ADA Grade A)*

**FALLS RISK**

**Risk Factors**

Patients who exhibit one or more of the following risk factors are at an increased risk for falling:

- Increased age
- History of falls or mobility problems
- Patient score ≥ 4 on the STEADI Stay Independent screening questionnaire
- Poor performance on the Timed-Up-and-Go assessment (score ≥ 12 seconds)

**Patients 65 years or older**

The Centers for Disease Control and Prevention (CDC) Stopping Elderly Accidents, Deaths & Injuries (STEADI) program is endorsed. Annual screening for falls and balance or gait problems is recommended by the CDC STEADI program and American Geriatric Society (AGS) guidelines *(AGS Grade A)*, and is required as an ACO Quality measure.

**Testing Options**

Providers should screen for patient reports of falling within the previous year, or expression of feeling unsteady when standing or walking or worry about falling. Patients should complete the STEADI Stay Independent screening questionnaire *(Table 13).*

Those patients who score ≥ 4 on the screening questionnaire, or report falling in the past year, or express feeling unsteady when standing/walking or concern for falling should complete the Timed-Up-and-Go (TUG) assessment.

Those patients who score ≥ 12 seconds on the TUG should be considered at risk for falling. Providers may also use their judgment and provide interventions to individual high risk patients with a lower score or refer those patients.

**Preventive Interventions**

The STEADI program includes an algorithm for preventive intervention based upon patient risk as determined by the STEADI screen and other clinical assessments. *(ADA Grade B)*
Patients identified at **low risk** (STEADI screen score < 4) should be rescreened in one year. *(Very low quality evidence, weak recommendation)*

Patients identified at **moderate risk** (TUG score ≥ 12 seconds and report 1 fall without injury within the last year) should receive:

- a) Education about fall risk factors *(AGS Grade C)*
- b) Recommendations regarding optimal calcium *(Very low quality evidence, weak recommendation)*
- c) Vitamin D supplementation of 600 IU/day for patients age 65-70 years. Patients older than 70 years should receive 800 IU/day. *(USPSTF Grade B)*
- d) Referral to community fall prevention program (i.e., Stepping On) OR referral to physical therapy *(AGS Grade A) (USPSTF Grade B)*

Patients at **high risk** (TUG score ≥ 12 seconds and report 1 fall with injury or report > 2 falls within the last year) should receive a multifactorial risk assessment. The multifactorial fall risk assessment should be followed by direct interventions in patients considered high risk for falling. Interventions should be tailored to the identified risk factors, coupled with an appropriate exercise program. *(AGS Grade A) The components most commonly included in efficacious interventions include:

- a) Adaptation or modification of home environment *(AGS Grade A)*
- b) Withdrawal or minimization of psychoactive medications *(AGS Grade B)*
- c) Vitamin D supplementation of 600 IU/day for patients age 65-70 years. Patients older than 70 years should receive 800 IU/day. *(USPSTF Grade B)*
- d) Exercise, particularly balance, strength, and gait training *(AGS Grade A) (USPSTF Grade B)* The minimum dose of exercise to protect an older adult against falls is 50 hours. The U.S. Department of Health and Human Services recommends balance training 3 or more days per week for older adults at risk for falling because of a recent fall or difficulty walking. The AGS recommends that exercise interventions include balance, gait, and strength training. *(AGS Grade A)*

<table>
<thead>
<tr>
<th>Table 13. Suggested Falls Screening Questionnaire (STEADI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please circle “Yes” or “No” for each statement below.</td>
</tr>
<tr>
<td>Yes (2)</td>
</tr>
<tr>
<td>Yes (2)</td>
</tr>
<tr>
<td>Yes (1)</td>
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<td>Yes (1)</td>
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<tr>
<td>Yes (1)</td>
</tr>
<tr>
<td>Yes (1)</td>
</tr>
</tbody>
</table>
HEARING

Newborn Patients (age 0-1 months)
If an initial hearing screening test was not performed before the newborn was discharged from the hospital, one should be completed within the first month of life.\textsuperscript{14,101-103} (Class I, LOE B) Newborn hearing screening is supported by state and federal legislation including Wisconsin Statute (253.115) and the Patient Protection and Affordable Care Act.\textsuperscript{104}

Patients age 4-10 years
Hearing screening tests should be completed one time between the following ages:
- 4-6 years (if patient is uncooperative, reschedule assessment in 6 months)
- 8-10 years (Class IIa, LOE C).

This recommendation is at variance with previously published guidelines\textsuperscript{14,15,105} which indicate hearing screening at patient ages 4, 5, 6, 8, and 10 years. However, there is currently no evidence to support an association with more frequent screening intervals and improved outcomes.

Annual screening between the ages of 3-8 years is required in Medicaid patients, see https://www.forwardhealth.wi.gov/WIPortal/Online%20Handbooks/Print/tabid/154/Default.aspx?ia=1&p=1&sa=24&s=2&c=61&nt=Description%20of%20Required%20Components%20of%20HealthCheck%20Screening.

Patients age 11-18 years
Current evidence suggests that hearing loss may occur due to secondhand tobacco smoke exposure or excessive exposure to noise.\textsuperscript{106} These studies are limited by inconsistent definitions of hearing loss, and varying frequency and threshold values for accurate testing.\textsuperscript{106-108} At this time, no recommendation can be made related to hearing screening in the adolescent patient population.

HEPATITIS C

Risk Factors
The relative importance of the risk factors for HCV infection varies substantially, and depends upon geographical location and patient population. Positive risk factors for HCV infection include\textsuperscript{109-111}:
- Previous or current injection drug use
- Recipient of a blood transfusion prior to 1992
- Long-term hemodialysis
- Being born to a HCV-infected mother
- Incarceration
- Intranasal drug use
- Getting an unregulated tattoo
- Other percutaneous exposures (i.e., occupational)

Patients born between 1945-1965
It is recommended to complete a one-time screening in patients born between 1945 and 1965.\textsuperscript{109-111} (USPSTF Grade B) Patients should be tested using a rapid or laboratory-conducted assay for HCV antibody test followed by a confirmatory nucleic acid testing (NAT) for HCV RNA.\textsuperscript{111-113}

Patients At Risk
It is recommended to test individuals at an increased risk for hepatitis C virus (HCV) infection (see risk factors above).\textsuperscript{109-111} (USPSTF Grade B) Patients with ongoing risk factors may be tested annually. (Very low quality evidence, weak recommendation) Tests should be completed using a rapid or laboratory-conducted assay for HCV antibody test followed by a confirmatory nucleic acid testing (NAT) for HCV RNA.\textsuperscript{111-113}

**HUMAN IMMUNODEFICIENCY VIRUS (HIV)**

**Risk Factors**
Positive risk factors for HIV infection include\textsuperscript{58,114,115}:
- Men who have sex with men (MSM);
- Injection drug users;
- Have acquired or requested testing for another sexually transmitted infection;
- Behavioral risk factors include: unprotected vaginal or anal intercourse; multiple sexual partners who are HIV-infected, bisexual, or injection drug users; and exchanging sex for drugs or money.

**All Patients (15-64 years)**
HIV screening is recommended once in average risk patients age 15-64 years, regardless of sexual activity or risk.\textsuperscript{114} (USPSTF Grade A) Additional screening may be completed based upon risk.

**Pregnant Patients (4 weeks)**
All pregnant women, including those who present in labor and are untested or whose HIV status is unknown, should be screened. Women screened during a previous pregnancy should be rescreened in subsequent pregnancies, preferably during the first prenatal visit.\textsuperscript{57,114} (USPSTF Grade A)

**At Risk Patients**
Adolescent and adult patients with risk factors for HIV infection should be screened (see risk factors above).\textsuperscript{58,114,115} (USPSTF Grade A) The CDC and ACOG guidelines recommend annual screening in patients at an increased or high risk for infection.\textsuperscript{58,115}

**Pre-exposure Prophylaxis (PrEP)**
Pre-exposure prophylaxis may be considered as additional intervention for uninfected partners in serodiscordant couples \textsuperscript{(High quality evidence, conditional recommendation)} and MSM, injection drug users, and heterosexual men and women at high risk of acquiring HIV (i.e., commercial sex workers).\textsuperscript{116-118} (High quality evidence, strong recommendation) For details related to therapy initiation and maintenance, consult Infectious Disease and/or reference the 2014 Centers for Disease Control and Prevention Preexposure Prophylaxis for the Prevention of HIV Infection in the United States Guideline.\textsuperscript{118} The following table (Table 14) provides a summary of the CDC recommendations:

<table>
<thead>
<tr>
<th>Table 14. Pre-exposure Prophylaxis Recommendations\textsuperscript{118}</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Men Who Have Sex With Men (MSM)</strong></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Detecting substantial risk of acquiring HIV infection

- HIV-positive sexual partner
- Recent bacterial sexually transmitted infection
- High number of sex partners
- History of inconsistent or no condom use
- Commercial sex worker
- HIV-positive injecting partner
- Sharing injection equipment
- Recent drug treatment (but currently injecting)

Clinically Eligible

- Documented negative HIV test result before prescribing PrEP
- No signs/symptoms of acute HIV infection
- Normal renal function; no contraindicated medications
- Documented hepatitis B virus infection and vaccination status

Prescription

- Daily, continuing, oral doses of Tenofovir disoproxil fumarate/ Emtricitabine ≤ 90-day supply

Other Services

- Follow-ups at least every 3 months to provide the following:
  - HIV test, medication adherence counseling, behavioral risk reduction support, side effect assessment, sexually transmitted infection symptom assessment
  - At 3 months and every 6 months thereafter, assess renal function.
  - Test for bacterial sexually transmitted infection every 6 months.

Testing Options

Conduct initial testing with an FDA-approved antigen/antibody combination (4th generation) immunoassay that detects HIV-1 and HIV-2 antibodies and HIV-1 p24 antigen to screen for established (HIV-1 or HIV-2) or acute (HIV-1) infection.\(^ {119} \)

Specimens with a reactive antigen/antibody combination immunoassay result (or repeatedly reactive) need be tested with an FDA-approved antibody immunoassay that differentiates HIV-1 and HIV-2 antibodies.\(^ {119} \)

Specimens that are reactive on the initial antigen/antibody combination immunoassay and nonreactive or indeterminate on the HIV-1/HIV-2 antibody differentiation immunoassay need to be tested with an FDA-approved HIV-1 NAT.\(^ {119} \)

**HUMAN PAPILLOMA VIRUS (HPV)**

Refer to Cervical Cancer and Immunization recommendations.

**IMMUNIZATIONS**

Return to Prenatal Table | Return to Infant/Child Table | Return to Adolescent Table | Return to Adult Table

It is recommended that immunization history for each individual patient is properly documented (including dates) within the medical record.\(^ {120} \) Documentation may be based upon patient reported history of disease, vaccination, refusal, or using historical data within the Wisconsin Immunization Registry (WIR). All patients who do not have a recommended vaccine properly documented should complete serologic testing to prove immunity or be re-immunized.
**Pediatric Patients (Birth-18 years)**

It is recommended to administer the Hepatitis B vaccine to all infants at birth, in particular, within 12 hours of birth to infants born to HBsAg positive mothers or to whom mother’s status is unknown.\(^{121,122}\) *(High level of evidence, strong recommendation)* Prophylactic anti-D immunoglobulin (RhoGAM) should be administered per the recommendations within **Antibody Testing** section.

The Recommended Childhood and Adolescent Immunization Schedule approved by the Advisory Committee on Immunization Practices (ACIP) should be followed.\(^{121,122}\) *(High quality evidence, strong recommendation)* The Schedule is provided in its entirety on the Centers for Disease Control website at [http://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html](http://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html).

Families choosing not to immunize or who do not follow the recommended immunization schedule need to sign a Vaccine Refusal Form. Pediatric vaccine refusal forms should be completed per policy.\(^{120,123,124}\) *(Very low quality evidence, weak recommendation)*

**Adult Patients (19 years+)**

The Recommended Adult Immunization Schedule approved by the Advisory Committee on Immunization Practices (ACIP) should be followed.\(^{122,125}\) *(High quality evidence, strong recommendation)* The Schedule is provided in its entirety on the Centers for Disease Control website at [http://www.cdc.gov/vaccines/schedules/hcp/adult.html](http://www.cdc.gov/vaccines/schedules/hcp/adult.html).

For patients who are pregnant, refer to the Advisory Committee on Immunization Practices (ACIP) Guidelines, found at [http://www.cdc.gov/vaccines/pubs/preg-guide.htm](http://www.cdc.gov/vaccines/pubs/preg-guide.htm).\(^{120}\) *(High quality evidence, strong recommendation)*

In women who are pregnant, administer a dose of pertussis (Tdap) during each pregnancy in the third trimester, between 27 and 36 weeks gestation, irrespective of the patient’s prior history of receiving Tdap. If Tdap is not administered during pregnancy, it should be administered immediately postpartum.\(^{126}\) *(High quality evidence, strong recommendation)*

Women in the second and third trimester of pregnancy are at increased risk for hospitalization from influenza. Therefore, routine influenza vaccination is recommended for all women who are or will become pregnant (in any trimester) during influenza season.\(^{120}\) *(High quality evidence, strong recommendation)*
Risk Factors
Patients who exhibit any of the following risk factors are at an increased risk for coronary heart disease:

- Diabetes or glucose intolerance
- Personal history of coronary heart disease or non-coronary atherosclerosis (e.g., abdominal aortic aneurysm, peripheral artery disease, carotid artery stenosis)
- Family history of cardiovascular disease before age 65
- Tobacco use
- Hypertension
- Overweight (BMI ≥ 25) or Obese (BMI ≥ 30)

Patients age 9-11 years
Universal screening is recommended in patients age 9-11 years (NHLBI Grade B, strongly recommended) using non-fasting total cholesterol and HDL measurements.

Patients age 17-21 years
Universal screening is recommended in patients age 17-21 years (NHLBI Grade B, strongly recommended) using non-fasting total cholesterol and HDL measurements.

Patients 22-75 years
Test average risk patients age 22-75 years once every 5 years (NHLBI Grade B, moderate)
Patients considered at increased risk (see risk factors above) may need to be screened more frequently.

Based on the judgment of the provider, if LDL and TG levels are low and overall cardiovascular risk is low, subsequent screening may be delayed (i.e., every 10 years).

Testing Options
Testing in adults should be performed with a fasting lipid panel (total cholesterol, LDL, HDL and Triglycerides) or non-fasting total cholesterol and HDL measurements. If non-fasting labs are performed and total cholesterol is > 200mg/dL or HDL is < 40 mg/dL, it is recommended to follow up with a fasting lipid panel for LDL management.

LUNG CANCER

Risk Factors
High Risk Factors for lung cancer include:

- Age 55-80 years AND
- ≥ 30 pack-year smoking history AND
- Current smoker or smoking cessation < 15 years ago

Patients 55-80 years
It is recommended to complete annual low-dose computed tomography (LDCT) screening in asymptomatic patients who exhibit all of the high risk factors. Chest radiography has never been
shown to decrease lung cancer mortality; therefore a chest x-ray should never be used for lung cancer screening.\textsuperscript{133,135} (USPSTF Grade B) Screening may or may not be covered by insurance (i.e., Medicare may provide coverage until age 74 years).

Screening is not appropriate once the patient has ceased smoking for 15 years or more, or if the patient has or develops a health problem which substantially limits life expectancy, or the ability or willingness to have a curative lung surgery.\textsuperscript{133} (USPSTF Grade B) Current evidence is lacking on the net benefit of expanding low-dose computed tomography (LDCT) screening to include lower or moderate-risk patients. At this time, lung cancer screening should not be performed in patients who are not high risk.

**Smoking Cessation**
All patients enrolled in a lung cancer screening program should receive smoking cessation interventions.\textsuperscript{133} (USPSTF Grade A)

**Balance of Benefit and Harms**
Physician support and guidance for discussions with patients regarding screening can be found in the USPSTF document, as well as the following table (Table 15) which describes the level of radiation exposure during screening. The expected benefits of screening include early detection of lung cancer, and a reduction in mortality (20%). A potential harm is the high false positive rate (25%) of LDCT screening.\textsuperscript{134}

### Table 15 Radiation Exposure Comparison for LDCT

<table>
<thead>
<tr>
<th>Procedure Type (Single Scan)</th>
<th>Approximate Radiation Dose</th>
<th>Comparable background radiation</th>
<th>Additional lifetime risk of fatal cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chest CT</td>
<td>7 mSv</td>
<td>2 years</td>
<td>Low</td>
</tr>
<tr>
<td>Chest Low Dose CT</td>
<td>1.5 mSv</td>
<td>6 months</td>
<td>Very Low</td>
</tr>
<tr>
<td>Chest X-Ray</td>
<td>0.1 mSv</td>
<td>10 days</td>
<td>Minimal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Approximate additional risk of fatal cancer for an adult from examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal</td>
<td>1 in 1,000,000 to 1 in 100,000</td>
</tr>
<tr>
<td>Very Low</td>
<td>1 in 100,000 to 1 in 10,000</td>
</tr>
<tr>
<td>Low</td>
<td>1 in 10,000 to 1 in 1,000</td>
</tr>
</tbody>
</table>

Information on radiologic exposure can be found at [http://www.radiologyinfo.org/en/safety/?pg=sfty_xray](http://www.radiologyinfo.org/en/safety/?pg=sfty_xray)

**NEWBORN SCREENING**

**CONGENITAL HEART DISEASE**
Screen for critical congenital heart disease (CCHD) using pulse oximetry within 24-48 hours of birth, as required by Wisconsin Statute (253.13).\textsuperscript{103,136}

**BLINDNESS PREVENTION**
Ophthalmic antibiotic should be applied topically to the eyes within 1 hour of birth, in accordance with Wisconsin Statute (253.11).\textsuperscript{103,137}
BLOOD SCREENING PANEL

Complete a newborn blood screening panel as required by Wisconsin Statute (253.13) to assess for the following congenital diseases:

- Argininosuccinic Acidemia (ASA)
- Biotinidase Deficiency
- Congenital Adrenal Hyperplasia
- Congenital Hypothyroidism
- Citrullinemia (Types I & II)
- Cystic Fibrosis
- Fatty Acid Oxidation Disorders (11)
- Galactosemia
- Homocystinuria
- Hypermethioninemia
- Maple Syrup Urine Disease
- Organic Acidemias (12)
- Phenylketonuris (PKU) and Hyperphenylalaninemia
- Severe Combined Immune Deficiency (SCID)
- Tyrosinemia (Types I, II & III)
- Hemoglobinopathies (Sickle Cell Disease, Hemoglobin S-Beta Thalassemia, Hemoglobin SC Disease, Hemoglobin Variants)

The blood specimen should be collected between 24-48 hours of life in full term infants, and must be collected prior to discharge from the birth hospital. Infants born outside of a hospital (i.e., home births) must have a specimen collected within one week of life. Additional requirements for populations such as premature infants can be found: http://www.slh.wisc.edu/clinical/newborn/health-care-professionals-guide/.

HEARING TEST

See Hearing Section.

VITAMIN K ADMINISTRATION

Intramuscular injection of vitamin K (0.5-1 mg) should be administered within 1 hour of birth to prevent hemolytic disease of the newborn. (Low quality evidence, strong recommendation)

VITAMIN D SUPPLEMENTATION

It is recommended that all exclusively breast-fed or formula-fed infants (who receive less than 1,000 mL of formula per day) begin to receive vitamin D supplement (400 IU) within the first few days of life. (Low quality evidence, weak recommendation) Vitamin supplementation is also recommended for breastfed infants who are receiving formula supplementation. Supplementation should be continued unless the infant is weaned to at least 1 L/day of vitamin-D-fortified formula or whole milk.

OBESITY/BODY MASS INDEX (BMI)

Pediatric Patients

All physician and healthcare providers should address weight management and lifestyle issues with all pediatric and adolescent patients, regardless of presenting weight, at least each year. This assessment includes the calculation of height, weight, and BMI for age and plotting those measures on standard growth charts. (Class IIa, Level B). The USPSTF recommends screening in
children age 6-18 years. Patients who are identified as obese should be offered or referred to comprehensive, intensive behavioral interventions to promote an improvement in weight status.\textsuperscript{141} (USPSTF Grade B)

**Adult Patients**
The USPSTF recommends screening for obesity in all adults.\textsuperscript{142} (USPSTF Grade B) Patients who are identified as obese (BMI $\geq$ 30 kg/m$^2$) should be offered or referred to intensive, multicomponent behavioral interventions.\textsuperscript{142} (USPSTF Grade B)

### OSTEOPOROSIS

Falls are the precipitating factor in nearly all fractures, therefore falls prevention is recommended (see Falls Risk section).\textsuperscript{95}

**Risk Factors**
An estimated 10-year probability for major fracture may be calculated using the Fracture Risk Assessment Tool (FRAX) developed by the World Health Organization.\textsuperscript{143}

Major risk factors for osteoporosis and osteoporotic fractures in women include\textsuperscript{95,144,145}:
- Advancing age (> 70-80 years)
- Family history (first-degree relative) of osteoporosis
- Personal history of fractures
- Low body weight (BMI < 20-25 kg/m$^2$ or weight < 40 kg)
- Weight loss (greater than 10% of usual adult weight)
- Diabetes mellitus
- Steroid use (glucocorticoid therapy in daily dose of $\geq$ 5 mg prednisone or equivalent for $\geq$ 3 months)
- Rheumatoid arthritis
- Excessive alcohol and/or tobacco use

Major risk factors for osteoporosis and osteoporotic fractures in men include\textsuperscript{146,147}:
- Advancing age (> 70-80 years)
- Low body weight (BMI < 20-25 kg/m$^2$ or weight < 40 kg)
- Physical inactivity
- Weight loss (greater than 10% of usual adult weight)
- Prolonged systemic corticosteroid therapy
- Androgen deprivation therapy
- Spinal cord injury
- Excessive alcohol and/or tobacco use

**Postmenopausal Women (Younger than 65 years)**
Initial assessment using the FRAX is recommended in postmenopausal women under the age of 65 years if the patient is considered at increased risk (i.e., exhibiting one or more of the risk factors above).\textsuperscript{95,144,145} (USPSTF Grade B) Bone mineral density screening should be completed using central dual-energy X-ray absorptiometry (DXA or DEXA), if indicated by the FRAX score (major osteoporotic score 9.3%).
**Women age 65 years or older**
It is recommended to perform an initial screen in women age 65 years using central dual-energy X-ray absorptiometry (DXA or DEXA) to measure bone mineral density.\(^95,144,145\) (USPSTF Grade B)

**Men age 70 years or older**
It is recommended to perform an initial FRAX assessment in men age 70. Screening using central dual-energy X-ray absorptiometry (DXA or DEXA) may be completed as indicated by the FRAX score.\(^95,146,147,149\) (Low quality evidence, weak recommendation)

**Opportunistic Screening**
Computed tomography (CT) scans are not recommended for assessment of bone mineral density, despite recent evidence suggesting a correlation between scores obtained via DXA and those obtained during a CT colonography (virtual colonoscopy).\(^150\)

**Prenatal Care**

**ANEMIA**
Iron deficiency anemia in pregnancy has been associated with an increased risk of low birth weight, preterm delivery, and perinatal mortality.\(^151\) Screen for iron deficiency at the first prenatal visit (4 weeks)\(^57,151-153\) (USPSTF Grade B) using a hematocrit or hemoglobin test. Repeat testing once between 24-28 weeks using a hematocrit or hemoglobin.\(^154\) (Class I, LOE C)

**ANEUPLOIDY/NEURAL TUBE DEFECT**
Discuss screening for aneuploidy and open neural tube defects at the first prenatal visit (Tables 16 and 17).\(^103\) (Class I, LOE C) If the patient desires invasive testing, refer to the Center for Perinatal Care for the procedure which will include pretest genetic counseling. (Class IIa, LOE C) If the patient desires noninvasive prenatal testing (NIPT), referral to the Center for Perinatal Care for pretest genetic counseling may be considered.\(^155,156\) (Class IIb, LOE C)

NIPT should only be offered to women with increased risk for aneuploidy. Risk factors include:
- Maternal age 35 years or older at delivery;
- Fetal ultrasonographic findings indicating an increased risk for aneuploidy;
- History of a prior pregnancy with a trisomy;
- Positive test results for aneuploidy, including first trimester, sequential, integrated or quad screen;
- Parental balanced robertsonian translocation with increased risk for fetal trisomy 13 or 21).\(^155\)

Some insurance does not cover NIPT. There are multiple labs offering NIPT. Each lab has different costs for the testing, and some labs offer patient assistance plans to assist with payment if insurance denies coverage. NIPT can be ordered through the genetic counselors at the Center for Perinatal Care as they can provide thorough pre-test counseling about the accuracy, limitations and costs of this testing.
### Table 16. Advantages and Disadvantages of Aneuploidy and Open Neural Tube Defect Screening Options

<table>
<thead>
<tr>
<th>Test</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
| **NIPT**       | • Screens for Trisomy 21, 18, 13, sex chromosome aneuploidy, +/- microdeletions or triploidy (depending on company)  
• Early (9-10 weeks)  
• No risk to pregnancy  
• Among screening tools:  
  o Highest detection rates (91-99%)  
  o Lowest false positive rate (1% or less)  
• Easy- blood only (can be done at PCP office but at this time many patients referred to genetic specialist)  
• TAT: 8-10 days | • Not diagnostic  
• Limited insurance coverage, policies & plans vary  
• Only specific trisomies, +/- microdeletion syndromes  
• Different testing companies with different platforms and costs  
• Not consistent detection rates across diseases  
• New technology, potential lack of understanding among patients and providers  
• Possible no results due to low fetal fraction |
| **FTS**        | • Screens for Trisomy 21, 18, 13 (T13 +/- depending on lab)  
• No risk to pregnancy  
• Early (12-14 weeks)  
• High detection (91-95%)  
• Quick (TAT ~ 5days) | • Not diagnostic  
• Requires referral to certified center  
• False positives (2-5%)  
• Does not screen for open neural tube defects (ONTD) |
| **Quad**       | • Screens for Trisomy 21, 18  
• No risk to pregnancy  
• Screens for open neural tube defects (ONTD)  
• Easy- blood only in PCP office  
• TAT: 5-7 days | • Not diagnostic  
• Highest false positive rate among FTS & NIPT  
• Later in pregnancy (>15-16 weeks) |
| **CVS**        | • Diagnostic (>99%)  
• Tests for all aneuploidy (polyploidy)  
• Test for other chromosome anomalies (e.g., translocations)  
• Test for other genetic diseases as indicated  
• Early (12-14 weeks)  
• TAT: 10-14 days (if available, preliminary results in 48 hours) | • Risk of miscarriage or complication  
• Does not test for open neural tube defect (ONTD)  
• Mosaicism  
• Possible no result due to low sample size |
| **Amnio- centesis** | • Diagnostic (>99%)  
• Tests for all aneuploidy (polyploidy)  
• Tests for other chromosome anomalies (e.g., translocations)  
• Test for other genetic diseases as indicated  
• Tests for open neural tube defects (ONTD) (98%)  
• TAT: 7-10 days (if added on, FISH 48 hours) | • Risk of miscarriage or complication  
• Later in pregnancy (>15-16 weeks) |

NIPT (noninvasive prenatal testing)  
FTS (first trimester screen)  
CVS (chorionic villus sampling)
## Table 17. Aneuploidy and Open Neural Tube Defect Screening

<table>
<thead>
<tr>
<th></th>
<th>Screening</th>
<th>Diagnostic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Alone</strong></td>
<td>First Trimester Screen (FTS)*</td>
<td>Quad Screen*</td>
</tr>
<tr>
<td><strong>Timing</strong></td>
<td>&gt; 35 years</td>
<td>11 4/7-13 6/7 weeks (IRA- blood 9 0/7)</td>
</tr>
<tr>
<td><strong>Detection Rates: Aneuploidy</strong></td>
<td>Trisomy 21: 91-95% Trisomy 18: 95% Trisomy 13: 95% (False Positive 2%)</td>
<td>Trisomy 21: 77-81% Trisomy 18: 60-80% Trisomy 13: N/A (False Positive 6-7%)</td>
</tr>
<tr>
<td><strong>Detection Rates: Open Neural Tube Defects (ONTD)</strong></td>
<td>ONTD: N/A Anencephaly: 90%</td>
<td>80%</td>
</tr>
<tr>
<td><strong>Pregnancy Risks</strong></td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>TAT</strong></td>
<td>N/A</td>
<td>5-7 days IRA- Same day as U/S</td>
</tr>
</tbody>
</table>

*FTS detection rates based on NTD Labs, Quad and AFP detection rates based on Mayo Labs, NIPT based on Sequenom Labs  
** NIPT only recommended for women with an increased risk for aneuploidy as per ACOG guidelines  
CVS (chorionic villus sampling)  
NIPT (noninvasive prenatal testing)
ANTIBODY TESTING
All pregnant women should be tested for ABO blood group (Rh-D type) and screened for the presence of erythrocyte antibodies (type and screen) during the first prenatal visit. \(^{57,103,153,157,158}\) (USPSTF Grade A)

Antibody testing should be repeated in unsensitized Rh (D)-negative patients at 24-28 weeks of gestation, unless the biological father is known to be Rh (D)-negative. \(^{158}\) (USPSTF Grade B) Patients who are unsensitized D-negative should receive prophylactic anti-D immunoglobulin (RhoGAM 300 mcg) at 28 weeks, or at the time of any of the following\(^{103,153,157}\):
- Ectopic gestation
- Abortion (threatened, spontaneous or induced)
- Procedures associated with possible fetal-to-maternal bleeding, such as chorionic villus sampling or amniocentesis
- Conditions associated with fetal-maternal hemorrhage (i.e., abdominal trauma)
- Unexplained vaginal bleeding during pregnancy
- Delivery of a newborn who is D-positive

Testing should be completed prior to immunoglobulin (RhoGAM) administration.

ASYMPTOMATIC BACTERIURIA
Pregnant women should be screened for asymptomatic bacteriuria at their first prenatal visit. \(^{159}\) (USPSTF Grade A) Screening should be completed using urine culture and urinalysis.

BREAST FEEDING
It is recommended to provide interventions during pregnancy and after birth to promote and support breastfeeding. \(^{160}\) (USPSTF Grade B) 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. \(^{160}\)

Exclusive breastfeeding is the ideal nutrition for approximately 6 months after delivery and is sufficient to support optimal growth and development. \(^{103,161,162}\) Thereafter, infants may receive complementary foods with continued breast feeding up to 1 year of age or beyond. \(^{161}\)

CYSTIC FIBROSIS
Screening is most efficacious in the non-Hispanic white and Ashkenazi Jewish populations. As it is increasingly difficult to assign a single ethnicity to individual patients, cystic fibrosis screening may be offered to all patients. \(^{153,163,164}\) (Low quality evidence, weak recommendation) Screening should be completed using a cystic fibrosis mutation panel.

FOLIC ACID
It is recommended that all average risk women planning or capable of pregnancy should take a daily supplement containing 0.4 to 0.8 mg of folic acid. \(^{153}\) (USPSTF Grade A) Women at increased
risk, with a history of a prior child with a neural tube defect or family history of neural tube defect, should be offered a higher dose of folic acid supplementation (4 mg daily) beginning 1 month before trying to conceive and continuing through the first 3 months of pregnancy.\textsuperscript{153,165} (Low quality evidence, strong recommendation)

Note: Folic acid supplementation should not be achieved by taking multiple vitamins, due to the risk of vitamin A toxicity.

**GESTATIONAL WEIGHT GAIN**

It is recommended to discuss gestational weight gain.\textsuperscript{103,166} (Low quality evidence, strong recommendation) The Institute of Medicine guidelines (Table 18) outline the recommended maternal weight gain, based upon the patient’s pre-pregnancy body mass index (BMI).\textsuperscript{166}

Table 18. Weight Gain Recommendations for Pregnancy

<table>
<thead>
<tr>
<th>Prepregnancy Weight Category</th>
<th>BMI</th>
<th>Recommended Total Weight Gain Range (lbs.)</th>
<th>Recommended Rates of Weight Gain Second and Third Trimesters (mean range, lb./week)</th>
<th>Recommended Total Weight Gain Range (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Single Fetus</td>
<td>Single Fetus</td>
<td>Twins</td>
</tr>
<tr>
<td>Underweight</td>
<td>Less than 18.5</td>
<td>28-40</td>
<td>1 (1-1.3)</td>
<td>--</td>
</tr>
<tr>
<td>Normal weight</td>
<td>18.5-24.9</td>
<td>25-35</td>
<td>1 (0.8-1)</td>
<td>37-54</td>
</tr>
<tr>
<td>Overweight</td>
<td>25.0-29.9</td>
<td>15-25</td>
<td>0.6 (0.5-0.7)</td>
<td>31-50</td>
</tr>
<tr>
<td>Obese (includes all classes)</td>
<td>30.0 or greater</td>
<td>11-20</td>
<td>0.5 (0.4-0.6)</td>
<td>25-42</td>
</tr>
</tbody>
</table>

**GROUP B STREPTOCOCCUS**

All women should be screened for group b streptococcus (GBS) between 35-37 weeks using a vaginal-rectal swab.\textsuperscript{103,167} (CDC Grade AII)

If GBS colonization status from current pregnancy unknown during onset of labor or rupture of membranes before 37 weeks gestation with a substantial risk for preterm delivery, then GBS screening should be performed and intrapartum antibiotic prophylaxis should be provided pending culture results (unless a vaginal-rectal GBS screen was performed within the preceding 5 weeks).\textsuperscript{167} (CDC Grade AII) The following CDC algorithms\textsuperscript{167} may be used as reference:

- GBS Screening/Intrapartum Prophylaxis (Preterm labor) Algorithm
- GBS Screening/Intrapartum Prophylaxis (Preterm Premature Rupture of Membranes) Algorithm
- Intrapartum Antibiotic Prophylaxis Regimens Algorithm

**HEMOGLOBINOPATHIES**

Recommend offering carrier screening for hemoglobinopathies to women of Southeast Asian, African, or Mediterranean descent, as these women are at an increased risk.\textsuperscript{57,103,168} (Class I, LOE C) Screening should be offered at the first prenatal visit, if not offered during pre-conception.
Patients of Southeast Asian or Mediterranean descent: Accurate hemoglobin identification should be completed using a complete blood count (CBC) in patients of non-African descent. If the results indicate a reduced mean corpuscular volume (MCV < 80 fL) and normal iron studies, a hemoglobin electrophoresis should be ordered. If the MCV is below normal, iron deficiency anemia has been excluded, and the hemoglobin electrophoresis is not consistent with β-thalassemia trait (i.e., there is no elevation of Hb A2 or Hb F), then DNA-based testing should be used to detect α-globin gene deletions characteristic of α-thalassemia.

Patients of African descent: Testing using a hemoglobin electrophoresis in addition to a CBC is recommended. If the MCV is below normal (< 80 fL), iron deficiency anemia has been excluded, and the hemoglobin electrophoresis is not consistent with β-thalassemia trait (i.e., there is no elevation of Hb A2 or Hb F), then DNA-based testing should be used to detect α-globin gene deletions characteristic of α-thalassemia.

HEPATITIS B
It is recommended to screen all women for Hepatitis B during the first prenatal visit using a test for HBsAg. (USPSTF Grade A). Women who engage in high risk behaviors (i.e., multiple sexual partners in the previous 6 months, previous STI, recent or current injection drug use, or hepatitis B surface antigen-positive sex partner) or with clinical hepatitis should be retested prior to delivery. Women at risk for hepatitis infection should also be vaccinated (see Immunizations).

PROSTATE CANCER

PSA screening remains a controversial issue. The 2012 USPSTF report recommends against prostate-specific antigen (PSA)-based screening for prostate cancer (USPSTF Grade D), and states that physicians should not offer or order PSA screening unless they are prepared to engage in shared decision making that enables an informed choice by the patient. The American Cancer Society, American Urologic Association, and the American College of Physicians also support PSA screening only after an informed decision-making conversation with the patient.

Risk Factors
Risk factors for increased prostate cancer mortality include:
- African American ancestry
- Having one or more first-degree relatives (parent, sibling, or child) diagnosed with prostate cancer before age 65

Men 40-49 years
It is recommended to consider counseling regarding the risks and benefits of prostate cancer screening if the patient is considered at increased risk (see risk factors above), however routine PSA testing is not recommended. (Very low quality evidence, weak recommendation) Patients with a life expectancy of less than 10 years should not be screened. (Moderate quality evidence, weak recommendation)

Men 50-69 years
A shared decision making conversation regarding the risks and benefits of PSA screening should be considered once in average risk and increased risk patients (see risk factors above) however routine PSA testing is not recommended. (Moderate quality evidence, weak recommendation)
Patients with a life expectancy of less than 10 years should not be screened.\textsuperscript{171,173} (Moderate quality evidence, weak recommendation)

**Men 70 years or older**
Patients 70 years or older should not be routinely screened using PSA testing, as data suggests little benefit to treatment in this population.\textsuperscript{176,177} (High quality evidence, strong recommendation)

**Shared Decision Making**
The following resources may be used as physician support for the shared-decision making process.

**Patient Decision Aids:**
- ASCO Prostate Cancer Screening with PSA Testing
- Annals of Internal Medicine
- Option Grid
- Healthwise
- University of Oxford
- Virginia Commonwealth

**Table 19. Physician Discussion Points for PSA Testing**

<table>
<thead>
<tr>
<th>Benefits of Screening</th>
<th>Risks/Harms of Screening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early stages of prostate cancer are easier to treat and more likely to be cured.</td>
<td>Not all prostate cancers need treatment especially in individuals that are older or with other health problems. Prostate cancer treatment has some risks and side effects, including urinary incontinence, problems with erections, or bowel problems.</td>
</tr>
<tr>
<td>PSA testing can be done with a widely available blood test.</td>
<td>PSA testing is not perfect. PSA levels can be elevated when cancer is not present and not elevated when cancer is present.</td>
</tr>
<tr>
<td></td>
<td>Patients with a high PSA level will likely need to undergo a biopsy to determine further treatment (such as surgery or active surveillance).</td>
</tr>
<tr>
<td>PSA screening may help to detect prostate cancer early.</td>
<td>Some prostate cancers never spread beyond the prostate gland during an individual’s lifetime.</td>
</tr>
<tr>
<td>For some men, having the test can provide them with reassurance that they likely don’t have prostate cancer.</td>
<td>PSA testing can provoke anxiety and confusion especially if an elevated level is obtained. Inflammation, benign enlargement and infection of the prostate can cause false elevations. For abnormal initial PSA results, more specific free to total PSA testing may be considered to reduce this error.\textsuperscript{178}</td>
</tr>
<tr>
<td>The number of deaths from prostate cancer has gone down since PSA testing became available.</td>
<td>Although significant, it’s not yet clear how much of the decrease in deaths from prostate cancer is due to early detection and treatment based on PSA testing. Data is still being collected.</td>
</tr>
</tbody>
</table>
**Testing Options**
Targeted screening for prostate cancer should only be completed after thoughtful consideration of patient age, health status, individual risk for prostate cancer, and patient preference defined during the shared decision-making process. If the decision is made to perform screening, PSA testing with or without a digital rectal exam (DRE) may be completed every 1-2 years.\(^{171,174}\) *(Low quality evidence, weak recommendation)*

**SEXUAL ACTIVITY (BEHAVIORAL COUNSELING)**

**Risk Factors**
Patients with the following risk factors are at increased risk for developing a sexually transmitted infection (STI)\(^{179}:\)
- Current STI or other infections within the past year
- Multiple sex partners
- Inconsistent condom use
- Persons who exchange sex for money or drugs

**Special Populations**
Clinicians should be aware of populations with a particularly high prevalence of STIs including\(^{179,180}:\)
- African Americans (highest of all ethnic groups)
- American Indians, Alaska Natives, and Latinos (higher prevalence)
- Men who have sex with men (MSM)
- Persons with low income in urban settings
- Current or former inmates
- Military recruits
- Persons with mental illness or a disability
- Current or former intravenous drug users
- Persons with a history of sexual abuse
- Patients at public STI clinics

**Patients 11-17 years**
The USPSTF recommends high-intensity behavioral counseling (30 minutes- 2 hours) for all sexually active adolescents.\(^{179,180}\) *(USPSTF Grade B)* The most successful counseling approaches provide basic information about STIs and STI transmission; assess the patient’s risk for transmission; and provide training in pertinent skills, such as condom use, communication about safe sex, problem solving, and goal setting. Counseling interventions may include face-to-face counseling, videos, written material, or telephone support.\(^{179}\)

**Patients 18 years or older**
The USPSTF recommends high-intensity behavioral counseling (30 minutes- 2 hours) for all sexually active adults at an increased risk for sexually transmitted infection (see risk factors above).\(^{179,180}\) *(USPSTF Grade B)* The most successful counseling approaches provide basic information about STIs and STI transmission; assess the patient’s risk for transmission; and provide training in pertinent skills, such as condom use, communication about safe sex, problem solving, and goal setting. Counseling interventions may include face-to-face counseling, videos, written material, or telephone support.\(^{179}\)
In the event of time constraints, providers may consider providing brief education to patients on how to reduce their risk for sexually transmitted infection transmission, including abstinence, correct and consistent condom use, and limiting the number of sex partners.58

SKIN CANCER (BEHAVIORAL COUNSELING)

Risk Factors
High risk factors associated with developing melanoma181-188:
- Strong family history of malignant melanoma (greater than 3 first-degree affected relatives)
- Personal history of melanoma
- Multiple benign nevi (more than 50) or atypical nevi
- Excessive sun exposure
- Use of indoor tanning equipment. We concur with the American Academy of Dermatology (2012) that the use of indoor tanning beds and devices represents a significant and avoidable risk factor for the development of both melanoma and non-melanoma skin cancers.186,187

Additional risk factors include fair or freckled skin, light hair (red or blonde) or light eye color (blue, green, gray), or sun sensitivity (sunburn easily or blistering sun burn).182,184,188 It is still not known the degree of clinical significance that these factors play in skin cancer risk individually or in combination with one another.

Patients 10-24 years
It is recommended to counsel all patients 10-24 years of age with fair skin or any of the previously stated risk factors about minimizing their exposure to ultraviolet radiation.183,189 (USPSTF Grade B) Sun protective behavior should be encouraged; such as avoiding exposure during certain times of day (peak hours), wearing appropriate types of clothing, applying and reapplying sunscreen of SPF 15 or greater, and minimizing overall sun exposure.

Patients 25 years or older
Given the low risks associated with counseling, behavioral counseling and education related to sun protective behavior for all patients may be considered regardless of age or risk status. (Very low quality evidence, weak recommendation) Sun protective behavior should be encouraged; such as avoiding exposure during certain times of day (peak hours), wearing appropriate types of clothing, applying and reapplying sunscreen of SPF 15 or greater, and minimizing overall sun exposure.

SYphilis

Risk Factors
Patients at an increased risk for syphilis infection include190:
- Commercial sex workers
- Persons who exchange sex for drugs
- Adults in correctional facilities
Heterosexual Male and Nonpregnant Female Patients
Routine screening should not be completed on asymptomatic patients not an increased risk for infection.\textsuperscript{190} (USPSTF Grade D) Syphilis screening is strongly recommended in patients at an increased risk (see above risk factors).\textsuperscript{190} (USPSTF Grade A)

Pregnant Female Patients (4 weeks)
All pregnant women should be screened at the first prenatal visit. Screening should be repeated during the third trimester and at delivery for high risk patients (i.e., uninsured, women living in poverty, sex workers, illicit drug users, and women in communities with high syphilis morbidity).\textsuperscript{190,191} (USPSTF Grade A) 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 \textit{T.pallidum} particle agglutination (TP-PA).\textsuperscript{191}

Men Who Have Sex With Men (MSM)
It is recommended that men who have sex with men (MSM) complete syphilis serology, with confirmatory testing, annually.\textsuperscript{58} (High quality evidence, strong recommendation) More frequent STD screening (i.e., every 3-6 months) may be indicated for MSM with multiple or anonymous partners or MSM patients who have sex in conjunction with illicit drug use or whose sex partners participate in similar high-risk behaviors.\textsuperscript{58}

Testing Options
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 \textit{T.pallidum} particle agglutination (TP-PA).\textsuperscript{191}

TOBACCO USE

All Patients
Every patient should be assessed for tobacco use and/or secondhand smoke exposure at every clinical visit when vital signs are obtained (suggested screening questions included in Table 20).\textsuperscript{192-194} (PHS Grade A)

As parental smoking and tobacco use are two of the strongest risk factor for smoking initiation in children, assess smoking status of the parent or guardian during pediatric visits.\textsuperscript{195,196} (PHS Grade B) Non-use should be reinforced by providers and other health care professionals, especially among former tobacco users.\textsuperscript{192} (PHS Grade C)

Pregnant Patients
Providers should identify and provide interventions to tobacco and nicotine users during the first prenatal visit, as well as throughout the course of pregnancy.\textsuperscript{192,193} (PHS Grade B) Pregnant smokers should be offered person-to-person psychosocial interventions that exceed minimal advice to quit.\textsuperscript{192,197} (PHS Grade A) Pharmacotherapy is not recommended for use in pregnant women, and more intensive support and resources, including the First Breath Program should be provided.
**Table 20. Suggested Screening Question(s) for Tobacco Use (PHS Grade C)**

<table>
<thead>
<tr>
<th>Single Screening Question (Adults 18 years or older)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>How often have you used tobacco within the last month?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Single Screening Question (Adolescents 11-17 years)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>During the past 12 months, have you used tobacco or nicotine products (i.e. E-cigarettes)?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Screening Question (Pregnant Adults)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Which of the following statements best describes your cigarette smoking?</td>
<td></td>
</tr>
<tr>
<td>a) I smoke regularly now; about the same as before finding out I was pregnant.</td>
<td></td>
</tr>
<tr>
<td>b) I smoke regularly now, but I've cut down since I found out I was pregnant.</td>
<td></td>
</tr>
<tr>
<td>c) I smoke every once in a while.</td>
<td></td>
</tr>
<tr>
<td>d) I have quit smoking since finding out I was pregnant.</td>
<td></td>
</tr>
<tr>
<td>e) I wasn't smoking around the time I found out I was pregnant, and I don't currently smoke cigarettes.</td>
<td></td>
</tr>
</tbody>
</table>

**TUBERCULOSIS**

**Risk Factors and Risk Assessment**

Positive risk factors for immediate tuberculosis (TB) testing (beginning as early as 3 months of age) include:

- Contact with people with confirmed or suspected contagious TB (contact investigation)
- Children with radiographic or clinical findings suggesting TB
- Children immigrating from countries with endemic infections (e.g., Asia, Middle East, Africa, Latin America, countries of the former Soviet Union), including international adoptees
- Children with travel histories greater than 1 week to countries with endemic infection and substantial contact with indigenous people from such countries. (Note: If the child is well and has no history of exposure, the test may be delayed up to 10 weeks after return)

Patients at increased risk of progression of latent tuberculosis infection to tuberculosis disease include those with recent exposure AND one or more of the following risk factors:

- Other medical conditions, including diabetes mellitus or chronic renal failure
- Malnutrition
- Congenital or acquired immunodeficiencies
- Receiving tumor necrosis factor (TNF) antagonists

Patients who respond positively to the screening questions are considered at risk for TB infection. Validated screening questions to determine the risk of latent tuberculosis infection (exposure) in children are included below.

1. Has a family member or contact had tuberculosis disease?
2. Has a family member had a positive tuberculin skin test result?
3. Was your child born in a high-risk country (countries other than the United States, Canada, Australia, New Zealand, or Western and North European countries)?
4. Has your child traveled (had contact with resident populations) to a high-risk country for more than 1 week?

**Pediatric Patients (6 months, 12 months, 24 months, 3-10 years)**

It is recommended to complete a risk assessment (see above) in pediatric patients by 1 month of age, and at ages 6 months, 12 months, 24 months, and then annually between 3-10 years. Those
patients found to be at risk for TB infection should be tested using a tuberculin skin test (TST) or interferon gamma release assay (IGRA) as indicated by age (see Table 21).\textsuperscript{15,198} (Very low quality evidence, weak recommendation)

**Adolescent Patients (11-17 years)**

It is recommended to complete an annual risk assessment (see above) in adolescent patients and to test those found to be at risk for tuberculosis (TB) infection using a tuberculin skin test (TST) or interferon gamma release assay (IGRA) as indicated by age (see Table 21).\textsuperscript{15,198} (Very low quality evidence, weak recommendation)

**Testing Options**

In addition to testing based upon risk, an initial TST or IGRA should be performed before initiation of immunosuppressive therapy, including prolonged steroid administration, use of TNF-alpha antagonists, or other immunosuppressive therapy in any child requiring these treatments. Children infected with HIV should have an annual TST performed.\textsuperscript{198}

<table>
<thead>
<tr>
<th>Table 21. Tuberculosis Testing Options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TST preferred, IGRA acceptable</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>IGRA preferred, TST acceptable</strong></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**VIOLENCE (INTIMATE PARTNER VIOLENCE)**

**Patients 14-46 years**

It is recommended to screen females of childbearing age for intimate partner violence, such as domestic violence.\textsuperscript{199} (USPSTF Grade B) Intimate partner violence is defined as physical, sexual or psychological harm by a current or former partner or spouse.

Screening may be considered annually using the Hurt, Insult, Threaten, and Scream (HITS) assessment tool.\textsuperscript{200,201} (Moderate quality evidence, weak recommendation) Patients who score 10 points or greater should be considered a positive screen.\textsuperscript{201}

It is recommended to provide or refer patients who screen positive to intervention services.\textsuperscript{199} (USPSTF Grade B) Patients may be referred to Social Work (as available by clinic) or may be provided with community resources.

It is important to consider that the patient may not be ready to take action at the present time. The patient may wait to take action until they feel it may be possible without endangering their life.
VISION

Patients age 3-5 years
It is recommended that vision screening occur at the ages of 3, 4, and 5 years to detect the presence of amblyopia or its risk factors.\textsuperscript{14,202} (Class IIa, LOE B) If the patient is uncooperative and the test cannot be completed, reschedule the assessment.

Patients age 6-18 years
Vision screening tests should be completed one time between the following ages:
- 6-8 years
- 10-12 years
- 13-15 years
- 16-18 years (Class IIa, LOE C)

These recommendation are consistent with the 2013 American Academy of Family Physicians (AAFP) report\textsuperscript{203} for pediatric vision screening every 1-2 years after the age of 5 years; however they are slightly discrepant from previously published guidelines\textsuperscript{14,15} which indicate screening at patient ages 3, 4, 5, 6, 8, 10, 12, 15, and 18 years.

VISIT FREQUENCY

Prenatal Visits
Average risk patients with uncomplicated pregnancies should visit the clinic every 4 weeks until 28 weeks of gestation, every 2 weeks from 28-36 weeks, and then weekly until delivery.\textsuperscript{103}

Well Child Checks
All infants discharged on the first or second postpartum day need to be seen within 48 hours of discharge. Breastfeeding infants need to be seen within 48 hours of discharge. This is a state requirement for children who are Medicaid or HealthCheck eligible.

Well Child visits should occur at 2, 4, 6, 9, 12, 15, 18, 24 months, annually between ages 3-6 years and every 1-2 years between the ages of 7-17 years.\textsuperscript{14,15} It is recommended to consider patient privacy (absence of parent or guardian in the room) beginning at age 11 when discussing sensitive topics such as sexual activity, drug or alcohol use, mental health symptoms, etc.

Disclaimer
CPGs are described to assist clinicians by providing a framework for the evaluation and treatment of patients. This Clinical Practice Guideline outlines the preferred approach for most patients. It is not intended to replace a clinician’s judgment or to establish a protocol for all patients. It is understood that some patients will not fit the clinical condition contemplated by a guideline and that a guideline will rarely establish the only appropriate approach to a problem.
Appendix A. High Risk Recommendations

Patients who exhibit one or more of the following high risk factors are no longer considered average risk, and fall outside the scope of this guideline. These patients may require more frequent preventive screening, therefore suggested actions are provided to guide primary care physicians in the proper referral and treatment of identified patients.

**BREAST CANCER- HIGH RISK**

<table>
<thead>
<tr>
<th>High Risk Factors</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women with a family history of any of the following:</td>
<td>Further genetic risk evaluation is recommended.</td>
</tr>
<tr>
<td>• A known breast cancer gene mutation in the family</td>
<td></td>
</tr>
<tr>
<td>• First or second-degree relative with breast cancer diagnosed ≤ age 45</td>
<td></td>
</tr>
<tr>
<td>• First or second-degree relative with ovarian/fallopian tube/primary peritoneal cancer</td>
<td></td>
</tr>
<tr>
<td>• First or second-degree relative with male breast cancer</td>
<td></td>
</tr>
<tr>
<td>• Two or more breast cancers diagnosed at any age among first, second, or third-degree relatives on the same side of the family (maternal or paternal). This can include two primary breast cancers in one relative.</td>
<td></td>
</tr>
<tr>
<td>• A family history of breast cancer at any age AND any one of the following in a first, second, or third-degree relative on the same side of the family (maternal or paternal): pancreatic cancer, prostate cancer (Gleason ≥ 7), sarcoma, adrenocortical carcinoma, brain tumor, endometrial cancer, leukemia, lymphoma, diffuse gastric cancer, thyroid cancer, macrocephaly, hamartomatous GI polyps, trichilemmomas, palmoplantar keratosis, oral mucosal papillomatosis, or other unusual dermatologic findings</td>
<td></td>
</tr>
<tr>
<td>• Ashkenazi Jewish ancestry and any family history of breast or ovarian cancer in first, second, or third-degree relatives</td>
<td></td>
</tr>
</tbody>
</table>

| Personal history of breast cancer (including invasive ductal, lobular, and DCIS) | Annual screening unless otherwise recommended by oncology physicians. |
| Breast biopsy with atypia or LCIS | Complete annual screening unless indicated by oncology physicians. |
| Prior chest wall radiation between the ages of 10-30 for treatment of cancer (Hodgkins) | Complete annual screening at 8 years post therapy or age 40. |

First-degree: parents, siblings, children  
Second-degree: grandparents, aunts, uncles, nieces, nephews, grandchildren, half-siblings  
Third-degree: great-grandparents, great-aunts, great-uncles, great-grandchildren, first cousins
## CERVICAL CANCER- HIGH RISK

<table>
<thead>
<tr>
<th>High Risk Factor</th>
<th>Recommendations(^{46,48})</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Immunosuppression</strong> <em>(HIV positive, transplant, etc.)</em></td>
<td>Complete cervical cytology screening twice within the first year after diagnosis of HIV or other immunosuppressed states at onset of sexual activity and annually thereafter.(^{115})</td>
</tr>
<tr>
<td><strong>History of diethylstilbestrol (DES) exposure</strong></td>
<td>Colposcopy may be considered during an initial exam. If the colposcopic exam is abnormal, repeat annually with four-quadrant Pap test. If the colposcopic exam is normal, perform annual examinations including cytology sampling of endocervical, ectocervical and vaginal fornices cells (four-quadrant Pap test).(^{205,206})</td>
</tr>
</tbody>
</table>
| **History of CIN 2, 3, or cervical cancer** | **Adolescent Patients**
Observation over intervention is recommended for CIN 1, 2, or 1, 2. Patients with CIN 3 should be treated.\(^{51}\)

**Patients 21-24 years**
Either treatment or observation is acceptable, provided colposcopy is adequate. When CIN 2 is specified, observation is preferred (see additional ASCCP recommendations based upon results during observation).\(^{55}\)
When CIN 3 is specified, or colposcopy is inadequate, treatment using excision or ablation of T-zone is preferred.\(^{55}\)

**Patients 25 years or older**
If adequate colposcopy, complete either excision or ablation of T-zone with co-testing at 12 and 24 months.\(^{55}\)

If inadequate colposcopy or recurrent CIN 2, 3 or endocervical sampling is CIN 2, 3, perform diagnostic excisional procedure with co-testing at 12 and 24 months. If any abnormal test from co-testing, perform colposcopy with endocervical sampling. If two negative results from co-testing, repeat co-testing in 3 years and proceed with routine screening. |
| **Positive HPV result or infection** | **Adolescent Patients**
Observation over intervention is recommended\(^{50}\), as more than 90% of HPV infections regress within 3 years.\(^{51}\)

**Patients 30 years or older**
Either repeat co-testing in 12 months or complete an immediate HPV genotype-specific testing for HPV16 alone or HPV16/18 (see additional ASCCP recommendations based upon test result).\(^{49,55}\) |
<table>
<thead>
<tr>
<th>High Risk Factors</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>One first-degree relative* with colorectal cancer diagnosed before age 60 years</td>
<td>Colonoscopy every five years beginning at age 40 or 10 years before the age of the youngest case in the immediate family.</td>
</tr>
<tr>
<td>Two or more first-degree relatives* diagnosed at any age with colorectal cancer</td>
<td>Colonoscopy every five years beginning at age 40 or 10 years before the age of the youngest case in the immediate family.</td>
</tr>
<tr>
<td>First-degree relative* with colorectal cancer at greater than or equal to 60 years, or two second-degree relatives with colorectal cancer</td>
<td>The work group recognizes this imposes an increased risk; however, due to lack of evidence supporting the screening recommendations, the work group does not support a recommendation in this category.</td>
</tr>
<tr>
<td>Inflammatory bowel disease, chronic ulcerative colitis and Crohn’s disease</td>
<td>Colonoscopy every one to two years starting eight years after the onset of pancolitis or 12 to 15 years after the onset of left-sided colitis.</td>
</tr>
<tr>
<td>Genetic diagnosis of familial adenomatous polyposis (FAP) or suspected FAP without genetic testing evidence</td>
<td>Annual flexible sigmoidoscopy beginning at age 10 to 12 years, along with genetic counseling.</td>
</tr>
<tr>
<td>Genetic or clinical diagnosis of hereditary nonpolyposis (Lynch Syndrome) colorectal cancer</td>
<td>Colonoscopy every one to two years beginning at age 20 to 25 years or 10 years before the age of the youngest case in the immediate family.</td>
</tr>
</tbody>
</table>

* First-degree relatives include only parents, siblings, and children.
## Appendix B. Rating Schemes for the Strength of the Evidence/Recommendations

### U.S. Preventive Services Task Force (USPSTF)

#### USPSTF Ranking of Evidence

<table>
<thead>
<tr>
<th>Level of Certainty*</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High</strong></td>
<td>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.</td>
</tr>
</tbody>
</table>
| **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. |
| **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.

#### USPSTF Grades for Recommendations

<table>
<thead>
<tr>
<th>Grade</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>The USPSTF recommends the service. There is high certainty that the net benefit is substantial.</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>I Statement</strong></td>
<td>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.</td>
</tr>
</tbody>
</table>
Grading of Recommendations Assessment, Development and Evaluation (GRADE)

Figure 1: GRADE Algorithm

GRADE Ranking of Evidence

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>We are confident that the effect in the study reflects the actual effect.</td>
</tr>
<tr>
<td>Moderate</td>
<td>We are quite confident that the effect in the study is close to the true effect, but it is also possible it is substantially different.</td>
</tr>
<tr>
<td>Low</td>
<td>The true effect may differ significantly from the estimate.</td>
</tr>
<tr>
<td>Very Low</td>
<td>The true effect is likely to be substantially different from the estimated effect.</td>
</tr>
</tbody>
</table>

GRADE Ratings for Recommendations

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong for using/Strong against using</td>
<td>The net benefit of the treatment is clear, patient values and circumstances are unlikely to affect the decision.</td>
</tr>
<tr>
<td>Weak for using/ Weak against using</td>
<td>The evidence is weak or the balance of positive and negative effects is vague.</td>
</tr>
</tbody>
</table>

U.S. Public Health Service (PHS)

PHS Grading Scheme

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Multiple well-designed randomized clinical trials, directly relevant to the recommendation, yielded a consistent pattern of findings.</td>
</tr>
<tr>
<td>B</td>
<td>Some evidence from randomized clinical trials supported the recommendation, but the scientific support was not optimal.</td>
</tr>
<tr>
<td>C</td>
<td>Reserved for important clinical situations in which the Panel achieved consensus on the recommendation in the absence of relevant randomized clinical trials.</td>
</tr>
</tbody>
</table>
Modified Grading of Recommendations Assessment, Development and Evaluation (GRADE) developed by the American Heart Association and American College of Cardiology

### AGS Grading Scheme

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
<th>Levels</th>
<th>Evidence</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A strong recommendation that the clinicians provide the intervention to eligible patients. Good evidence was found that the intervention improves health outcomes and the conclusion is that benefits substantially outweigh harm.</td>
<td>Multiple populations evaluated</td>
<td>Good evidence</td>
<td>SHOULD be performed/administered</td>
</tr>
<tr>
<td>B</td>
<td>A recommendation that clinicians provide the intervention to eligible patients. At least fair evidence was found that the intervention improves health outcomes and the conclusion is that benefits outweigh harm.</td>
<td>Limited populations evaluated</td>
<td>At least fair evidence</td>
<td>MAY BE CONSIDERED</td>
</tr>
<tr>
<td>C</td>
<td>No recommendation for or against the routine provision of the intervention is made. At least fair evidence was found that the intervention can improve health outcomes, but the balance of benefits and harms is too close to justify a general recommendation.</td>
<td>Very limited populations evaluated</td>
<td>At least fair evidence</td>
<td>MAY BE CONSIDERED</td>
</tr>
<tr>
<td>D</td>
<td>Recommendation is made against routinely providing the intervention to asymptomatic patients. At least fair evidence was found that the intervention is ineffective or that harm outweighs benefits.</td>
<td>Only consensus opinion of experts, case studies, or standard of care</td>
<td>At least fair evidence</td>
<td>MAY BE CONSIDERED</td>
</tr>
<tr>
<td>I</td>
<td>Evidence is insufficient to recommend for or against routinely providing the intervention. Evidence that the intervention is lacking, or of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.</td>
<td>Evidence insufficient to recommend for or against</td>
<td>None</td>
<td>MAY BE CONSIDERED</td>
</tr>
</tbody>
</table>
### American Diabetes Association (ADA)

#### ADA Grading Scheme

<table>
<thead>
<tr>
<th>Level of Evidence</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Clear evidence from well-conducted, generalizable RCTs that are adequately powered, including:</td>
<td></td>
</tr>
<tr>
<td>Evidence from a well-conducted multicenter trial</td>
<td></td>
</tr>
<tr>
<td>Evidence from a meta-analysis that incorporated quality ratings in the analysis</td>
<td></td>
</tr>
<tr>
<td>Compelling non-experimental evidence, i.e., “all or none” rule developed by the Center for Evidence-Based Medicine at the University of Oxford</td>
<td></td>
</tr>
<tr>
<td>Supportive evidence from well-conducted RCTs that are adequately powered, including:</td>
<td></td>
</tr>
<tr>
<td>Evidence from a well-conducted trial at one or more institutions</td>
<td></td>
</tr>
<tr>
<td>Evidence from a meta-analysis that incorporated quality ratings in the analysis</td>
<td></td>
</tr>
<tr>
<td><strong>B</strong> Supportive evidence from well-conducted cohort studies</td>
<td></td>
</tr>
<tr>
<td>Evidence from a well-conducted prospective cohort study or registry</td>
<td></td>
</tr>
<tr>
<td>Evidence from a well-conducted meta-analysis of cohort studies</td>
<td></td>
</tr>
<tr>
<td><strong>C</strong> Supportive evidence from poorly controlled or uncontrolled studies</td>
<td></td>
</tr>
<tr>
<td>Evidence from randomized clinical trials with one or more major or three or more minor methodological flaws that could invalidate the results</td>
<td></td>
</tr>
<tr>
<td>Evidence from observational studies with high potential for bias (such as case series with comparison with historical controls)</td>
<td></td>
</tr>
<tr>
<td>Evidence from case series or case reports</td>
<td></td>
</tr>
<tr>
<td>Conflicting evidence with the weight of evidence supporting the recommendation</td>
<td></td>
</tr>
<tr>
<td><strong>E</strong> Expert consensus or clinical experience</td>
<td></td>
</tr>
</tbody>
</table>

### Centers for Disease Control and Prevention (CDC)

#### CDC Grading Scheme

<table>
<thead>
<tr>
<th>Strength of recommendation</th>
<th>Definition</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Strong evidence for efficacy and substantial clinical benefit</td>
<td>Strongly recommended</td>
<td></td>
</tr>
<tr>
<td><strong>B</strong> Strong or moderate evidence for efficacy but only limited clinical benefit</td>
<td>Generally recommended</td>
<td></td>
</tr>
<tr>
<td><strong>C</strong> Insufficient evidence for efficacy or efficacy does not outweigh possible adverse consequences</td>
<td>Optional</td>
<td></td>
</tr>
<tr>
<td><strong>D</strong> Moderate evidence against efficacy or for adverse outcome</td>
<td>Generally not recommended</td>
<td></td>
</tr>
<tr>
<td><strong>E</strong> Strong evidence against efficacy or for adverse outcome</td>
<td>Never recommended</td>
<td></td>
</tr>
</tbody>
</table>

#### Quality of evidence supporting recommendation

<table>
<thead>
<tr>
<th>Quality of evidence</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I</strong> Evidence from at least one well-executed randomized, controlled trial or one rigorously designed laboratory-based experimental study that has been replicated by an independent investigator</td>
<td></td>
</tr>
<tr>
<td><strong>II</strong> Evidence from at least one well-designed clinical trial without randomization, cohort or case-controlled analytic studies (preferably from more than one center), multiple time-series studies, dramatic results from uncontrolled studies, or some evidence from laboratory experiments</td>
<td></td>
</tr>
<tr>
<td><strong>III</strong> Evidence from opinions of respected authorities based on clinical or laboratory experience, descriptive studies, or reports of expert committees</td>
<td></td>
</tr>
</tbody>
</table>
# NHLBI Grading Scheme

<table>
<thead>
<tr>
<th>Grade</th>
<th>Strength of Recommendation*</th>
</tr>
</thead>
</table>
| A     | Strong recommendation  
There is high certainty based on evidence that the net benefit† is substantial. |
| B     | Moderate recommendation  
There is moderate certainty based on evidence that the net benefit is moderate to substantial, or there is high certainty that the net benefit is moderate. |
| C     | Weak recommendation  
There is at least moderate certainty based on evidence that there is a small net benefit. |
| D     | Recommendation against  
There is at least moderate certainty based on evidence that it has no net benefit or that risks/harms outweigh benefits. |
| E     | Expert opinion ("There is insufficient evidence or evidence is unclear or conflicting, but this is what the Work Group recommends.")  
Net benefit is unclear. Balance of benefits and harms cannot be determined because of no evidence, insufficient evidence, unclear evidence, or conflicting evidence, but the Work Group thought it was important to provide clinical guidance and make a recommendation. Further research is recommended in this area. |
| N     | No recommendation for or against ("There is insufficient evidence or evidence is unclear or conflicting.")  
Net benefit is unclear. Balance of benefits and harms cannot be determined because of no evidence, insufficient evidence, unclear evidence, or conflicting evidence, and the Work Group thought no recommendation should be made. Further research is recommended in this area. |

*In most cases, the strength of the recommendation should be closely aligned with the quality of the evidence; however, under some circumstances, there may be valid reasons for making recommendations that are not closely aligned with the quality of the evidence (e.g., strong recommendation when the evidence quality is moderate, like smoking cessation to reduce CVD risk or ordering an ECG as part of the initial diagnostic work-up for a patient presenting with possible MI). Those situations should be limited and the rationale explained clearly by the Work Group.

†Net benefit is defined as benefits minus risks/harms of the service/intervention.
References


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122. (CDC) CfDCaP. Advisory Committee on Immunization Practices (ACIP) recommended immunization schedules for persons aged 0 through 18 years and adults aged 19 years and older--United States, 2013. MMWR Surveill Summ. 2013;62 Suppl 1:1.


